# DLP TV

**Chassis** : L65A(N)_Excalilbur
**Model** : HLR5078WX/XAA (HL-R5078W)
HLR5678WX/XAA (HL-R5678W)
HLR6178WX/XAA (HL-R6178W)

# SERVICE Manual

## DLP TV

HL-R5078W

## FEATURES

- HD Built in TV
- NTSC/ATSC/QAM Tuner Embedded
- AV network system (Anynet, D-Net)
- TV Guide On Screen™ system (Gemstar EPG)
- Digital Audio output (OPTICAL) jack
- Cable CARD™ slot
- Firmware upgrade by USB Port

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# 1. Precaution

To avoid possible damages or electric shocks or exposure to radiation, follow the instructions below with regard to safety, installation, service and ESD.

## 1-1 Safety Precautions

1. Make sure all protective devices are properly installed including non-metallic handles and compartment covers when installing or re-installing the chassis or chassis assemblies.

2. Make sure that no gaps exist between the cabinets for children to insert their fingers in to prevent children from receiving electric shocks.

   Errors may occur when the resistance is below 1.0 MΩ or over 5.2 MΩ.
   In these cases, make sure that the device is repaired before sending it back to the customer.

3. Check for Electricity Leakage (Figure 1-1)
   Warning: Do not use an insulated transformer for checking the leakage. Use only those current leakage testers or mirroring systems that comply with ANSIC 101.1 and the Underwriter Laboratory's specifications (UL1410, 59.7).

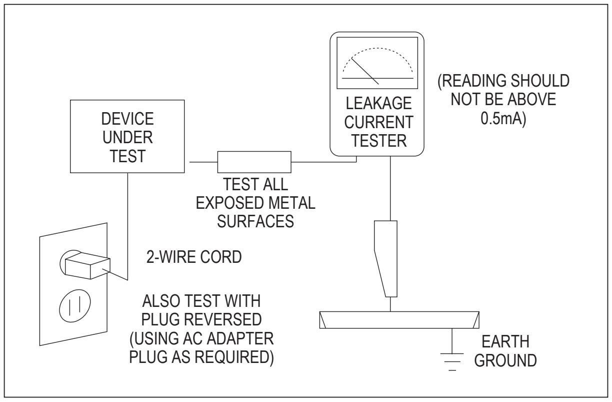

DEVICE UNDER TEST
LEAKAGE CURRENT TESTER
(READING SHOULD NOT BE ABOVE 0.5mA)
TEST ALL EXPOSED METAL SURFACES
2-WIRE CORD
ALSO TEST WITH PLUG REVERSED (USING AC ADAPTER PLUG AS REQUIRED)
EARTH GROUND

Fig. 1-1 AC Leakage Test

4. A high voltage is maintained within the specified limits using safety parts, calibration and tolerances. When voltage exceeds the specified limits, check each special part.

5. Warning for Engineering Changes:
   Never make any changes or additions to the circuit design or the internal part for this product.
   Ex: Do not add any audio or video accessory connectors. This might cause physical damage.
   Furthermore, any changes or additions to the original design/engineering will invalidate the warranty.

6. Warning - Hot Chassis:
   Some TV chassis are directly connected to one end of the AC power cord for electrical reasons.
   Without insulated transformers, the product can only be repaired safely when the chassis is connected to the earthed end of the AC power source.

   To make sure the AC power cord is properly connected, follow the instructions below. Use the voltmeter to measure the voltage between the chassis and the earthed ground. If the measurement is over 1.0V, unplug the AC power cord and change the polarity before re-inserting it. Measure the voltage between the chassis and the ground again.

7. Some TV chassis are shipped with an additional secondary grounding system. The secondary system is adjacent to the AC power line. These two grounding systems are separated in the circuit using an unbreakable/unchangeable insulation material.

8. When any parts, material or wiring appear overheated or damaged, replace them with new regular ones immediately. When any damage or overheating is detected, correct this immediately and make a regular check of possible errors.

9. Check for the original shape of the lead, especially that of the antenna wiring, any sharp edges, the AC power and the high voltage power. Carefully check if the wiring is too tight, incorrectly placed or loose. Never change the space between the part and the printed circuit board. Check the AC power cord for possible damages. Keep the part or the lead away from any heat-emitting materials.

10. Safety Indication:
    Some electrical circuits or device related materials require special attention to their safety features, which cannot be viewed by the naked eye. If an original part is replaced with another irregular one, the safety or protective features will be lost even if the new one has a higher voltage or more watts.

    Critical safety parts should be bracketed with (⚡ ⚠). Use only regular parts for replacements (in particular, flame resistance and dielectric strength specifications). Irregular parts or materials may cause electric shock or fire.

11. Pay additional attention to the current leakage as the voltage between the power board and the ballast is 220 to 440v, i.e. very high.
    And also beware of possible electric shock from the primary power source.

# 1-2 Servicing Precautions

Warning 1: First carefully read the "Safety Instruction" in this service manual.
When there is a conflict between the service and the safety instructions, follow the safety instruction at all times.

Warning 2: Any electrolytic capacitor with the wrong polarity will explode.

1. The service instructions are printed on the cabinet, and should be followed by any service personnel.

2. Make sure to unplug the AC power cord from the power source before starting any repairs.
   (a) Remove or re-install parts or assemblies.
   (b) Disconnect the electric plug or connector, if any.
   (c) Connect the test part in parallel with the electrolytic capacitor.

3. Some parts are placed at a higher position than the printed board. Insulated tubes or tapes are used for this purpose. The internal wiring is clamped using buckles to avoid contact with heat emitting parts. These parts are installed back to their original position.

4. After the repair, make sure to check if the screws, parts or cables are properly installed. Make sure no damage is caused to the repaired part and its surroundings.

5. Check for insulation between the blade of the AC plug and that of any conductive materials (i.e. the metal panel, input terminal, earphone jack, etc).

6. Insulation Check Process: Unplug the power cord from the AC source and turn the switch on. Connect the insulating resistance meter (500v) to the AC plug blade.

   The insulating resistance between the blade of the AC plug and that of the conductive material should be more than 1 ㏁.

7. Any B+ interlock should not be damaged.
   If the metal heat sink is not properly installed, no connection to the AC power should be made.

8. Make sure the grounding lead of the tester is connected to the chassis ground before connecting to the positive lead. The ground lead of the tester should be removed last.

9. Beware of risks of any current leakage coming into contact with the high-capacity capacitor.

10. The sharp edges of the metal material may cause physical damage, so ensure wearing protective gloves during the repair.

## 1-3 Static Electricity Precautions

1. Some semi-conductive ("solid state") devices are vulnerable to static electricity. These devices are known as ESD. ESD includes the integrated circuit and the field effect transistor. To avoid any materials damage from electrostatic shock, follow the instructions described below.

2. Remove any static electricity from your body by connecting the earth ground before handling any semi-conductive parts or ass'ys. Alternatively, wear a dischargeable wrist-belt.
   (Make sure to remove any static electricity before connecting the power source - this is a safety instruction for avoiding electric shock)

3. Remove the ESD ass'y and place it on a conductive surface such as aluminum foil to prevent accumulating static electricity.

4. Do not use any Freon-based chemicals.
   Such chemicals will generate static electricity that causes damage to the ESD.

5. Use only grounded-tip irons for soldering purposes.

6. Use only anti-static solder removal devices.
   Most solder removal devices do not support an anti-static feature. A solder removal device without an anti-static feature can store enough static electricity to cause damage to the ESD.

7. Do not remove the ESD from the protective box until the replacement is ready. Most ESD replacements are covered with lead, which will cause a short to the entire unit due to the conductive foam, aluminum foil or other conductive materials.

8. Remove the protective material from the ESD replacement lead immediately after connecting it to the chassis or circuit ass'y.

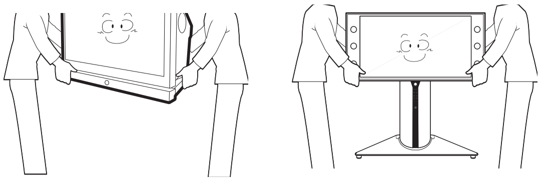
9. Take extreme caution in handling any uncovered ESD replacements. Actions such as brushing clothes or lifting your leg from the carpet floor can generate enough static electricity to damage the ESD.

### CAUTION

These servicing instructions are for use by
qualified service personnel only.
To reduce the risk of electric shock do not
perform any servicing other than that contained in the
operating instructions unless you are qualified to do so.

# 1-4 Installation Precautions

1. For safety reasons, more than two people are required for carrying the product.



2. Keep the power cord away from any heat emitting devices, as a melted covering may cause fire or electric shock.

3. When installing the product, make sure to keep it away from the wall (more than 10cm/4 inches) for ventilation purposes.
   Poor ventilation may cause an increase in the internal temperature of the product, resulting in a shortened component life and degraded performance.

4. Bend the external antenna cable when connecting it to the product. This is a measure to protect it from being exposed to moisture. Otherwise, it may cause a fire or electric shock.

5. Make sure to turn the power off and unplug the power cord from the outlet before repositioning the product. Also check the antenna cable or the external connectors if they are fully unplugged. Damage to the cord may cause fire or electric shock.

6. Keep the antenna far away from any high-voltage cables and install it firmly. Contact with the high-voltage cable or the antenna falling over may cause fire or electric shock.

7. When connecting the RF antenna, check for a DTV receiving system and install a separate DTV reception antenna for areas with no DTV signal.

8. Check the basics of the screen test.
   - Image position/size, Tilt adjustment, Actuator activation

# MEMO

# 2. Product Specification

## 2-1 Product Features

| Block | Specfication | Major IC | Remark |
|---|---|---|---|
| DMD | - Panel Resolution : 1920x1080 | xHD3 DMD Panel | |
| RF | - Integrated HDTV Tuner<br>(NTSC/ATSC/QAM TUNER Embedded) | ATI NXT2004, QAMLink | |
| Power | - Input Voltage : AC120V<br>- Stand-By : under 25W | Stand-by (KA1M0565) | |
| Video | - DNIe4- NTSC, ATSC- HDMI,PC<br>- 3D Comb filter | ADV7401, ATI X226B,<br>uD64083 | |
| Sound | - speaker : 20W x 2<br>- Trusurround XT, Dolby Digital | MSP4440 | |
| Cabinet | - L8 Design | | |

■ Chip Description

- ATI x226B : Xilleon 226 is the most advanced and highly integrated component for digital set-top boxes, information appliances, and televisions. Xilleon 226 provides dual-stream high-definition decode and display, an assortment of peripheral device controllers, and an embedded microprocessor.
- ADV7401 : The ADV7402 is an integrated video decoder that automatically indicates and converts High Definition or Standard Definition analog baseband television signal into a 4:2:2 component digital video data stream compatible with 20/16-bit or 10/8-Bit CCIR601/CCIR656 outputs for standard definition & SMPTE293M/296M/274M & ITU-R.BT1358 for High definition. All RGB graphics signals are output as 30-bit 4:4:4 RGB or 20-bit 4:2:2 YCrCb.
- MSP4440 : The MSP 44x0G family of single-chip Multi standard Sound Processors covers the sound processing of all analog TV-Standards worldwide, as well as the NICAM digital sound standards.
- ATI NXT2004 : The NXT2004 is a VSB/QAM receiver designed to operate in both the ATSC terrestrial and cable TV environ ments. The device is intended for use in set-top applications, PC based applications and DTV systems. For VSB or QAM channels the NXT2004 samples a 44 MHz IF signal, and presents MPEG data packets at the output.
- QAMLink : The BCM3125 combines an in-band 256-QAM receiver, an out-of-band QPSK receiver, a 4/16-QAM transmitter and tuner interface functions.
- uPD64083 : uPD64083 realizes a high precision Y/C separation and a noise reduction by the three-dimension signal processing for NTSC signal.

## 2-2 Key Features

| Model | HL-R5078W | HL-R5678W | HL-R6178W | HL-R7178W |
|---|---|---|---|---|
| Voltage | AC 110 - 120V~ | AC 110 - 120V~ | AC 110 - 120V~ | AC 110 - 120V~ |
| Frequency of Operation | 60Hz | 60Hz | 60Hz | 60Hz |
| Power Consumption | 230 watts | 230 watts | 230 watts | 230 watts |
| Dimensions (W x D x H) | 46.54 x 13.98 x 34.24 inches<br>1182 x 355 x 869.7 mm | 52.36 x 15.30 x 37.86 inches<br>1330 x 388.5 x 961.7 mm | 56.93 x 18.40 x 41.58 inches<br>1446 x 467.4 x 1056.2 mm | 65.79 x 20.43 x 46.81 inches<br>1671 x 519 x 1189 mm |
| Weight | 34.3 Kg / 75.62 lbs | 38.5 Kg / 84.77 lbs | 45 Kg / 99.21 lbs | 58.9 Kg / 116.6 lbs |

■ H/W Configuration
- DMD Panel : 0.85" (1920 x1080p, TI)
- 1 Optical Engine for the Panel : Slim and Cost-effective
- Color Wheel : R/G/B Color Implementation
- Lamp : 120W : 50", 56", 61"
  132W : 71"
- 2 NTSC/ATSC/QAM Tuners : NTSC/DTV Reception, Gemstar EPG & IR Transmitter
- Support HDMI Interface : Adopts DVI/HDMI systems for digital HDs including STB.
- DNIe4 : High quality image implementation
- AnyNet Feature : An enhanced interface for various external devices
- USB Interface : Use the USB interface for service purposes (S/W Upgrade)

■ S/W Configuration
- MCU : Built-in 300 MHz MIPS X226B CPU
- 4-Layered Architecture : Device Driver/OS/Hardware Abstraction/Application
- OSD : 32Bit True Color Graphics OSD
- Enhanced system stability by separating the DTV control and the application control systems into multi-processes.

■ Picture
- DMD Panel
  - * Panel Size : 0.85"
  - * Panel Resolution : 1920 x 1080
- Tuner : Integrated HDTV Tuner (NTSC/ATSC/QAM TUNER Embbeded)
- Display Format : 1920 x 1080

■ Sound
- Sound System : TruSurround XT,Dolby Digital
- Amp/Channel : 2 Channel Digital Amp
- Speaker System & Output(RMS)
  - * Main L/R : 15W + 15W
  - * Sound (RMS) : 15W + 15W

■ In/Out Terminals
- Rear : 2 RF In, 3 CVBS In, 3 S-VHS In, 2 Component In, 1 PC D-SUB In,
  2 HDMI In(DVI Comportable With Adaptive Jack Only), 1 Anynet port, 2 IEEE1394, 1 Gemstar IR out, 1 Optical audio,
  1 POD Card slot, 1 RS-232C port

## ■ Feature

- Component Interface (480i/480p/720p/1080i, Y/Pb/Pr)
- Digital Interface : HDMI
- Graphic Interface : PC
- Language : English/French/Spanish
- PIP : HD/SD PIP
- Picture Size : 4:3/16:9/Zoom1/Zoom2/Panorama
- V-CHIP
- Closed Caption
- Sleep Timer : 180 Min.
- Anynet Interface
- IEEE1394
- Optical sound output
- Gemstar IR output
- POD
- RS-232C

## ■ Remocon

- TM76

## ■ Power Supply

- 120V

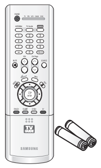
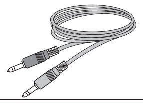
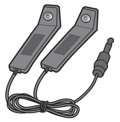
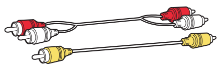
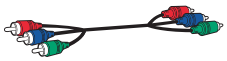
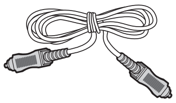
## ■ PIP Settings (X : PIP doesn't operate, △: PIP operate and swap doesn't operate, ○: PIP and swap operate)

| Sub \ Main | ATSC | QAM | NTSC | AV1 | AV2 | AV3 | S-Video1 | S-Video2 | S-Video3 | Component1 | Component2 | HDMI | PC | D-Net |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ATSC | X | X | X | X | X | X | X | X | X | X | X | X | X | ▲ |
| QAM | X | X | X | X | X | X | X | X | X | X | X | X | X | ▲ |
| NTSC | ▲ | ▲ | O | O | O | O | O | O | O | O | O | ▲ | X | ▲ |
| AV1 | ▲ | ▲ | O | X | O | O | O | O | O | O | O | ▲ | X | ▲ |
| AV2 | ▲ | ▲ | O | O | X | O | O | O | O | O | O | ▲ | X | ▲ |
| AV3 | ▲ | ▲ | O | O | O | X | O | O | O | O | O | ▲ | X | ▲ |
| S-Video1 | ▲ | ▲ | O | O | O | O | X | O | O | O | O | ▲ | X | ▲ |
| S-Video2 | ▲ | ▲ | O | O | O | O | O | X | O | O | O | ▲ | X | ▲ |
| S-Video3 | ▲ | ▲ | O | O | O | O | O | O | X | O | O | ▲ | X | ▲ |
| Component1 | ▲ | ▲ | O | O | O | O | O | O | O | X | O | ▲ | X | X |
| Component2 | ▲ | ▲ | O | O | O | O | O | O | O | O | X | ▲ | X | X |

## 2-3 Specifications Analysis

| Model | | HL-R5078W | HL-R5678W | HL-R6178W | HL-R7178W | HL-R5087W | HL-R5688W |
|---|---|---|---|---|---|---|---|
| Design | | | | | | | |
| Picture | Display Device | DLP | DLP | DLP | DLP | DLP | DLP |
| | Built-in Tuner | ATSC, NTSC | ATSC, NTSC | ATSC, NTSC | ATSC, NTSC | ATSC, NTSC | ATSC, NTSC |
| | Display Format | 1080i, 720p, 480p, 480i | 1080i, 720p, 480p, 480i | 1080i, 720p, 480p, 480i | 1080i, 720p, 480p, 480i | 1080i, 720p, 480p, 480i | 1080p, 1080i,720p, 480p,480i |
| | Screen Size | 50 inch | 56 inch | 61 inch | 71 inch | 50 inch | 56 inch |
| | Aspect ratio | 16:9 | 16:9 | 16:9 | 16:9 | 16:9 | 16:9 |
| | Progressive scan | Yes | Yes | Yes | Yes | Yes | Yes |
| | Digital Comb Filter | 3D Comb | 3D Comb | 3D Comb | 3D Comb | 3D Comb | 3D Comb |
| | First Surface Mirror | Yes | Yes | Yes | Yes | Yes | Yes |
| | Brightness | 800cd/㎡ | 600cd/㎡ | 500cd/㎡ | 400cd/㎡ | 800cd/㎡ | 800cd/㎡ |
| | Contrast | 10000:1 | 10000:1 | 10000:1 | 10000:1 | 2500:1 | 10000:1 |
| | Color Wheel Size/Bearing | 7segment/65 ¢ , Air Bearing | 7segment/65 ¢ , Air Bearing | 7segment/65 ¢ , Air Bearing | 7segment/65 ¢ , Air Bearing | 7segment/65 ¢ , Air Bearing | 7segment/65 ¢ , Air Bearing |
| | Anti-glare Sun Screen | Yes | Yes | Yes | Yes | Yes | Yes |
| | Screen Pitch | 0.098mm | 0.098mm | 0.098mm | 0.098mm | 0.098mm | 0.098mm |
| | Image enhancer | DNIe4 | DNIe4 | DNIe4 | DNIe4 | DNIe3 | DNIe4 |
| | DMD | xHD3 | xHD3 | xHD3 | xHD3 | xHD2 | xHD3 |
| Audio | Base/Tremble/Balance | No | No | No | No | No | No |
| | Equalizer | 5 Band | 5 Band | 5 Band | 5 Band | 5 Band | 5 Band |
| | Auto Volume Leveler | Yes | Yes | Yes | Yes | Yes | Yes |
| | Surround Sound | TruSurround XT<br>Dolby Digital | TruSurround XT<br>Dolby Digital | TruSurround XT<br>Dolby Digital | TruSurround XT<br>Dolby Digital | TruSurround XT<br>Dolby Digital | TruSurround XT<br>Dolby Digital |
| | Speaker system | 2 Way 4 Speaker | 2 Way 4 Speaker | 2 Way 4 Speaker | 2 Way 4 Speaker | 2 Way 4 Speaker | 2 Way 4 Speaker |
| | Output Power | 15Wx2 | 15Wx2 | 15Wx2 | 15Wx2 | 15Wx2 | 15Wx2 |
| Features | 2-Tuner Split-Screen PIP | Yes(HD/SD/QAM) | Yes(HD/SD/QAM | Yes(HD/SD/QAM) | Yes(HD/SD/QAM) | Yes(HD/SD) | Yes(HD/SD/QAM) |
| | Split-screen Side-by-Side | Yes | Yes | Yes | Yes | Yes | Yes |
| | MTS with dbx Noise Reduction/SAP | Yes | Yes | Yes | Yes | Yes | Yes |
| | Still Picture | Yes | Yes | Yes | Yes | Yes | Yes |
| Connections | Plug & Play | Yes | Yes | Yes | Yes | Yes | Yes |
| | EPG | Gemstar EPG | Gemstar EPG | Gemstar EPG | Gemstar EPG | Gemstar EPG | Gemstar EPG |
| | Anynet | Yes | Yes | Yes | Yes | Yes | Yes |
| | S-Video In | Rear 2/Side 1 | Rear 2/Side 1 | Rear 2/Side 1 | Rear 2/Side 1 | Rear 2 | Rear 2 |
| | HDTV Component Video Input (Y, Pb, Pr) 1080i/480P/480i | Rear 2 | Rear 2 | Rear 2 | Rear 2 | Rear 2 | Rear 2 |
| | PC | Yes | Yes | Yes | Yes | No | No |
| | HDMI | Yes | Yes | Yes | Yes | Yes | Yes |
| | Digital Sound | Optical 1 | Optical 1 | Optical 1 | Optical 1 | Optical 1 | Optical 1 |

## 2-4 Accessories

| Accessories | | Item | Item code | Remark |
|---|---|---|---|---|
| Supplied Accessories |  | Remocon<br>Alkaline Battery | BP59-00071B<br>4301-000103 | Samsung Service center |
| | | Manual | BP68-00513A | |
| |  | ANYNET cable | BN39-00518B | |
| |  | G-Link Cable | MD96-00036A | |
| Accessories that can be purchased additionally |  | Video Cable /<br>Audio Cable | - | Internal shopping mall |
| | | Antenna Cable | - | |
| |  | Component Cable | - | |
| |  | Optical Cable | - | |

# MEMO

# 3. Alignment & Adjustment

## 3-1 Service Instruction

■ Check items listed after changing each

| Check Items / Replaced Items | S/W Version | Front LCD | Index Delay | Actuator Gain | V-Position H-Position | CCA | Board LED | Tilt Focus |
|---|---|---|---|---|---|---|---|---|
| Digital Board | ● |  | ● | ● | ● | ● |  |  |
| Analog Board |  | ● |  |  |  |  | ● |  |
| Power Board |  | ● |  |  |  |  | ● | ● |
| Optical Engine |  | ● | ● | ● | ● | ● |  | ● |
| DMD Board |  |  |  | ● |  |  |  | ● |
| Lamp |  | ● |  |  |  |  |  |  |
| Color Wheel |  |  | ● |  |  | ● |  |  |
| Front LED Assy |  | ● |  |  |  |  |  |  |
| Actuator Subdetector Board |  | ● |  |  |  |  |  |  |

1. Software version check :
   After Entering the Service mode, Check the list below
   * S/W Notation
   "T_EXCAAUSO_00XX" indicates "EXCALIBUR  BASIC MODEL USA, ver. 0001".

**T_EXCAAUSO_00XX**
**2005_XX_XX**
**T-DTVUCOM5-00XX**
**T-XMENAUS0_00XX**

2. Front Information Window check : See page 6-7.

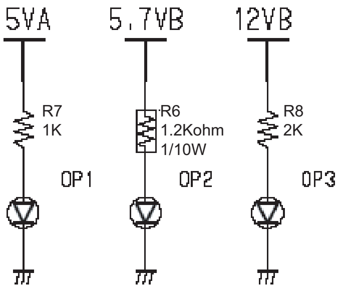
3. Index Delay adjustment : See page 3-15.

4. Actuator Gain adjustment : See page 3-17.

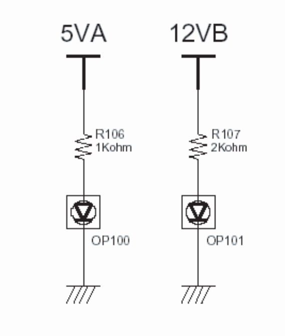
5. Vertical / Horizontal Position adjustment : See page 3-15.

6. CCA : See page 3-16.

7. Board LED check : Check all the LED are turned on.
   (In the Analog, Detect Board)



Power Check Indicator LED
(Analog Board )



Power Check Indicator LED
(Detect Board )

8. Tilt/Focus adjustment : See page 3-19.

## 3-2 How to Access Service Mode

1. Turn off the power to put the unit into the STAND-BY mode.

2. In order to enter the Service Mode, Press "Mute" → "1” → "8" → "2" → "POWER" button on the Remote Control.
In case entry into SERVICE MODE is unsuccessful, repeat the procedures above.

3. Initial DISPLAY State in times of Service Mode Switch overs

```
DDP1011(L8)
DNIe
ADV7401(M)
ADV7401(S)
Xilleon226
uPD64083
MSP4440
CCA(ON)
Cinema CCA
SP Actuator
ESP
GM1601
CHECKSUM
OPTION
SERVICE

T_EXCAAUSO_00XX
2005_XX_XX
T-DTVUCOM5-00XX
T-XMENAUS0_00XX
```

4. Buttons operations within Service Mode

| | |
|---|---|
| MENU | Full Menu Display / Move to Parent Menu |
| Direction keys ▲ / ▼ | Item Selection by Moving the Cursor |
| Direction keys ◀ / ▶ | Data Increase/Decrease for the Selected Item |
| Source | Cycles through the active input source that are connected to the unit |

## 3-3 Factory Data

★ The underlined are items applied during the service adjustment. None of the others should be adjusted.

1. DDP1011

| No | Item | Range | Default | Remark |
|---|---|---|---|---|
| 1 | V-Position | 0 ~ 60 | 30 | Screen upper and lower adjustment |
| 2 | H-Position | 0 ~ 120 | 60 | Screen left and right adjustments |
| 3 | LAMP Sync Type | Pulse/Pass | Pulse | Pulse(P), Pass(T) |
| 4 | INDEX DELAY | 0 ~ 1023 | 166 | Synchronizes the base position of the color wheel with the corresponding color signal.<br>This is critical to the natural color display. If the index delay is not properly set, even the correct CCA cordinates will not help when displaying natural colors. |
| 5 | SEQ SELECT | - | 0X05 | Sequence Selection |
| 6 | V-FLIP | Normal/Flip | Flip | Vertical Flip Operation |
| 7 | H-FLIP | Normal/Flip | Flip | Horizontal Flip Operation |
| 8 | Gamma | 0 ~ 15 | 2 | Gamma Table Selection |
| 9 | SLR | 0 ~ 1 | OFF | SLR Funcion On/Off |
| 10 | DMD_BIAS | 0 ~ 4 | E | DMD Bias pin voltage selection |
| 11 | Lamp Boost | 0 ~ 63 | 20 | Lamp Boost value selection |
| 12 | Lamp Sync Delay | 0 ~ 4095 | 0/120 | Lamp Sync delay value selection |
| 13 | FPGA |  | xHD3 | xHD3/xHD4 selection |
| 14 | Lamp Watt |  | 132W | 120W/132W |
| 15 | Lamp Select |  | Philips | Philips, Osram, Ushio |
| 16 | Test Pattern |  | 0 | This displays the built-in pattern of the DDP1011 chip. DDP1011 drives the DMD panel, so displaying this pattern means there is no error in the DDP1011 projection function and the panel itself. |

## 2. DNIe

| No | Item | Range | Default | Remark |
|---|---|---|---|---|
| 1 | Test Pattern |  | 0 | Test pattern selection |
| 2 | NR | - | - |  |
| 3 | SNI_PROC_CEA | ON/OFF | ON |  |
| 4 | SNI_PROC_CEP | ON/OFF | OFF |  |
| 5 | SNI_PROC_DEP | ON/OFF | ON |  |
| 6 | SNI_PROC_DCE | ON/OFF | ON |  |
| 7 | SNI_PROC_CCS | ON/OFF | ON |  |
| 8 | SNI_PROC_BWS | ON/OFF | ON |  |
| 9 | SNI_PROC_PCC | ON/OFF | ON |  |
| 10 | SNI_PROC_WTC | ON/OFF | ON |  |
| 11 | SNI_PROC_CTE | ON/OFF | OFF |  |
| 12 | SNI_PROC_CVD | ON/OFF | OFF |  |
| 13 | SNI_PROC_OUTP | ON/OFF | ON |  |
| 14 | CUTOFF | 0~255 | 32 |  |
| 15 | UPPER | 0~255 | 240 |  |
| 16 | LCE_GAIN | 0~255 | 0 |  |
| 17 | ALPHAL | 0~255 | 170 |  |
| 18 | ALPHAU | 0~255 | 170 |  |
| 19 | DCE_ALPHA | 0~255 | 50 |  |
| 20 | B_RATIO |  | 12000 | Low level information for the minimum value |
| 21 | W_RATIO |  | 6000 | High level information for the minimum value |
| 22 | BLACK_TILT | 0~255 | 90 | Black Stretch Area |
| 23 | WHITE_TILT | 0~255 | 240 | White Stretch Area |
| 24 | GAIN_X1 | 0~63 | 70 | Gain of horizontal high frequency region |
| 25 | GAIN_X2 | 0~63 | 35 | Gain of horizontal middle frequency region |
| 26 | GAIN_Y1 | 0~63 | 10 | Gain of vertical high frequency region |
| 27 | GAIN_Y2 | 0~63 | 10 | Gain of vertical middle frequency region |
| 28 | SUP_LIFT_SEL | ON/OFF | OFF |  |
| 29 | EXT_SEL | ON/OFF | OFF |  |
| 30 | BOOL_SUPP_SELX1 | ON/OFF | ON |  |
| 31 | BOOL_SUPP_SELX2 | ON/OFF | ON |  |
| 32 | BOOL_SUPP_SELY1 | ON/OFF | OFF |  |
| 33 | BOOL_SUPP_SELY2 | ON/OFF | OFF |  |
| 34 | BOOL_ENH_SEL | ON/OFF | ON |  |
| 35 | LOG_MODE | ON/OFF | ON |  |
| 36 | R_MR | - | 60 |  |
| 37 | CORING_ON | ON/OFF | ON |  |
| 38 | RTH1 | 0~31 | 0 |  |
| 39 | RTH2 | 0~31 | 3 |  |

| No | Item | Range | Default | Remark |
|---|---|---|---|---|
| 40 | NDON | ON/OFF | ON | |
| 41 | M_CCT_FAC | 0~1022 | 75 | |
| 42 | SCALE_ALPHA | 0~255 | 224 | |
| 43 | WB_RED_C_COEFF | 0~255 | 128 | |
| 44 | WB_GRN_C_COEFF | 0~255 | 128 | |
| 45 | WB_BLU_C_COEFF | 0~255 | 128 | |
| 46 | WB_RED_B_COEFF | 0~1023 | 512 | |
| 47 | WB_GRN_B_COEFF | 0~1023 | 512 | |
| 48 | WB_BLU_B_COEFF | 0~1023 | 512 | |
| 49 | R_Coring_TH1 | | 3 | |
| 50 | R_Coring_TH2 | | 3 | |
| 51 | R_Coring_TH3 | | 3 | |
| 52 | R_Coring_TH4 | | 3 | |
| 53 | H_FILTER1 | 0~11 | 0 | |
| 54 | H_FILTER2 | 0~10 | 0 | |
| 55 | V_FILTER1 | 0~4 | 0 | |
| 56 | V_FILTER2 | 0~3 | 0 | |
| 57 | Sub Color | | 53 | |
| 58 | DNIe On/Off | | OFF | |
| 59 | Sub Contrast | 50~150 | 105 | Brightness adjustment for the high-light parts of the screen |
| 60 | Contrast Offset | | 5 | |
| 61 | Sub Brightness | | 235 | Brightness adjustment for the low-light parts of the screen |

3. ADV7401(M)

| No | Item | Range | Default | Remark |
|---|---|---|---|---|
| 1 | AUTO COLOR | | | Auto Color function execution |
| 2 | SOG_SYNC_LEV | | | Embedded Sync Trigger Level |
| 3 | AGC_TIM | | | AGC Time Constant Selection |
| 4 | GAIN_MAN | | | ON,OFF Manual Gain Control Enable |
| 5 | A_GAIN | | | Manual Gain Value for Channel A |
| 6 | B_GAIN | | | Manual Gain Value for Channel B |
| 7 | C_GAIN | | | Manual Gain Value for Channel C |
| 8 | A_OFFSET | | | Channel A Offset |
| 9 | B_OFFSET | | | Channel B Offset |
| 10 | C_OFFSET | | | Channel C Offset |
| 11 | YPM | | 64 | Y Peaking Filter Mode |
| 12 | YSFM | | 1 | Y Shaping Filter Mode |
| 13 | WYSFM | | 19 | Wide Band TY Shaping Filter Mode |
| 14 | CSFM | | 0 | C Shaping Filter Mode |
| 15 | Contrast | | 128 | Contrast Adjust |
| 16 | Brightness | | 128 | Brightness Adjust |
| 17 | Hue | | 128 | Hue Adjust |
| 18 | CKILLTHR | | 3 | Colour Kill Threshold |
| 19 | SD_OFF_Cb | | 128 | SD Offset Cb Channel |
| 20 | SD_OFF_Cr | | 128 | SD Offset Cr Channel |
| 21 | SD_SAT_Cb | | 125 | Saturation Cr Channel |
| 22 | SD_SAT_Cr | | 125 | Saturation Cb Channel |
| 23 | IFFILTSEL | | 3 | IF Filter Select |
| 24 | LTA | | 0 | Luma Timing Adjust |
| 25 | CTA | | 2 | Chroma Timing Adjust |
| 26 | DNR_TH1 | | 0 | DNR Noise Threshold |
| 27 | DCT | | 0 | Digital Clamp Timing |
| 28 | LAGC | | 0 | Luma Automatic Gain Control |
| 29 | LAGT | | 3 | Luma Automatic Gain Timing |
| 30 | LMG | | 1184 | Luma Manual Gain |
| 31 | CAGC | | 2 | Chroma Automatic Gain Control |
| 32 | CAGT | | 3 | Chroma Automatic Gain Timing |
| 33 | CMG | | 2458 | Chroma Manual Gain |
| 34 | CTI_AB_EN | | ON | ON,OFF Chroma Transient Improvement Alpha Blend Enable |
| 35 | CTI_AB | | 3 | Chroma Transient Improvement Alpha Blend |

| No | Item | Range | Default | Remark |
|---|---|---|---|---|
| 36 | CTI_C_TH |  | 8 | CTI Chroma Threshold |
| 37 | NSFSEL |  | 0 | Split Filter Selection NTSC |
| 38 | CTAPSN |  | 2 | Chroma Comb Taps NTSC |
| 39 | CCMN |  | 0 | Chroma Comb mode NTSC |
| 40 | YCMN |  | 0 | Luna Comb Mode NTSC |
| 41 | HSSLICE |  |  |  |
| 42 | VSSLICE |  |  |  |
| 43 | DLL_PH |  | 0 |  |
| 44 | ST_NOISE |  |  | Sample Phase Adjustment |
| 45 | ALIAS_FILTER_EN |  | OFF |  |
| 46 | DNR-TH2 |  |  |  |

4. ADV7401(S)

| No | Item | Range | Default | Remark |
|---|---|---|---|---|
| 1 | AUTO COLOR | | | Auto Color function execution |
| 2 | SOG_SYNC_LEV | 0~31 | 11 | Embedded Sync Trigger Level |
| 3 | AGC_TIM | 0~7 | 0 | AGC Time Constant Selection |
| 4 | GAIN_MAN | | ON | ON,OFF Manual Gain Control Enable |
| 5 | A_GAIN | 0~1024 | 275 | Manual Gain Value for Channel A |
| 6 | B_GAIN | 0~1024 | 287 | Manual Gain Value for Channel B |
| 7 | G_GAIN | 0~1024 | 287 | Manual Gain Value for Channel C |
| 8 | A_OFFSET | 0~1024 | 0 | Channel A Offset |
| 9 | B_OFFSET | 0~1024 | 512 | Channel B Offset |
| 10 | C_OFFSET | 0~1024 | 512 | Channel C Offset |
| 11 | YPM | 0~255 | 64 | Y Peaking Filter Mode |
| 12 | YSFM | 0~32 | 1 | Y Shaping Filter Mode |
| 13 | WYSFM | 0~32 | 19 | Wide Band TY Shaping Filter Mode |
| 14 | CSFM | 0~7 | 0 | C Shaping Filter Mode |
| 15 | Contrast | 0~255 | 128 | Contrast Adjust |
| 16 | Brightness | 0~255 | 128 | Brightness Adjust |
| 17 | Hue | 0~255 | 128 | Hue Adjust |
| 18 | CKILLTHR | 0~7 | 5 | Colour Kill Threshold |
| 19 | SD_OFF_Cb | 0~255 | 128 | SD Offset Cb Channel |
| 20 | SD_OFF_Cr | 0~255 | 128 | SD Offset Cr Channel |
| 21 | SD_SAT_Cb | 0~255 | 125 | Saturation Cr Channel |
| 22 | SD_SAT_Cr | 0~255 | 125 | Saturation Cb Channel |
| 23 | IFFILTSEL | 0~7 | 3 | IF Filter Select |
| 24 | LTA | 0~3 | 0 | Luma Timing Adjust |
| 25 | CTA | 0~7 | 3 | Chroma Timing Adjust |
| 26 | DNR_TH1 | 0~255 | 0 | DNR Noise Threshold |
| 27 | DCT | 0~3 | 0 | Digital Clamp Timing |
| 28 | LAGC | 0~7 | 0 | Luma Automatic Gain Control |
| 29 | LAGT | 0~3 | 3 | Luma Automatic Gain Timing |
| 30 | LMG | 0~4096 | 1064 | Luma Manual Gain |
| 31 | CAGC | 0~7 | 2 | Chroma Automatic Gain Control |
| 32 | CAGT | 0~3 | 3 | Chroma Automatic Gain Timing |
| 33 | CMG | 0~4096 | 2458 | Chroma Manual Gain |
| 34 | CTI_AB_EN | | ON | ON,OFF Chroma Transient Improvement Alpha Blend Enable |
| 35 | CTI_AB | 0~3 | 3 | Chroma Transient Improvement Alpha Blend |

| No | Item | Range | Default | Remark |
|---|---|---|---|---|
| 36 | CTI_C_TH | 0~255 | 8 | CTI Chroma Threshold |
| 37 | NSFSEL | 0~3 | 0 | Split Filter Selection NTSC |
| 38 | CTAPSN | 0~3 | 2 | Chroma Comb Taps NTSC |
| 39 | CCMN | 0~7 | 0 | Chroma Comb mode NTSC |
| 40 | YCMN | 0~7 | 0 | Luna Comb Mode NTSC |
| 41 | HSSLICE | | | |
| 42 | VSSLICE | | | |
| 43 | DLL_PH | | | |
| 44 | ST_NOISE | | 0xFFFF | Sample Phase Adjustment |
| 45 | ALIAS_FILTER_EN | | OFF | |
| 46 | DNR-TH2 | | | |

5. Xilleon226

| No | Item | Range | Default | Remark |
|---|---|---|---|---|
| 1 | Main/Sub | | Main | |
| 2 | Y/UV | Y/UV | Y | |
| 3 | H Filter | | gh121a | |
| 4 | V Filter | | 128v05f | |
| 5 | 226 TEST PATT | | | |

6. Upd64083

| No | Item | Range | Default | Remark |
|---|---|---|---|---|
| 1 | DYCOR | 0~15 | 2 | DY detection coring level |
| 2 | DYGAIN | 0~15 | 9 | DY detection gain |
| 3 | DCCOR | 0~15 | 3 | DC detection coring level |
| 4 | DCGAIN | 0~15 | 6 | DC detection gain |
| 5 | YHCOR | 0~15 | 1 | Y output high frequency component coring |
| 6 | CDELAY | 0~15 | 4 | C signal output delay |
| 7 | YPFT | 0~15 | 3 | YPFT adjustment |
| 8 | YPFG | 0~15 | 7 | YPFG adjustment |

7. MSP4440

| No | Item | Range | Default | Remark |
|---|---|---|---|---|
| 1 | MDB Effect | 0~127 | 56 | Micronas Dynamic Bass |
| 2 | SRS Dialog | 0~127 | 50 | SRS Dialog clarity adjustment |
| 3 | PLL | | | Pilot low adjustment |
| 4 | PLH | | | Pilot high adjustment |

8. CCA

| No | Item | Range | Default | Remark |
|---|---|---|---|---|
| 1 | CCA | On/Off | ON | CCA On/Off Selection |
| 2 | Red-x | 0~32768 | 640 | Red-x adjustment |
| 3 | Red-y | 0~32768 | 340 | Red-y adjustment |
| 4 | Red-Y | 0~32768 | 86 | Red-Y adjustment |
| 5 | Green-x | 0~32768 | 300 | Green-x adjustment |
| 6 | Green-y | 0~32768 | 620 | Green-y adjustment |
| 7 | Green-Y | 0~32768 | 300 | Green-Y adjustment |
| 8 | Blue-x | 0~32768 | 150 | Blue-x adjustment |
| 9 | Blue-y | 0~32768 | 60 | Blue-y adjustment |
| 10 | Blue-Y | 0~32768 | 53 | Blue-Y adjustment |
| 11 | White-x | 0~32768 | 291 | White-x adjustment |
| 12 | White-y | 0~32768 | 300 | White-y adjustment |
| 13 | White-Y | 0~32768 | 439 | White-Y adjustment |
| 14 | WB Spread | | | Spread CCA value to all mode |
| 15 | Move HDMI | | | Move to the HDMI Mode |
| 16 | DRedX | | 640 | Target Red X value for CCA |
| 17 | DRedY | | 340 | Target Red Y value for CCA |
| 18 | DGreenX | | 300 | Target Green X value for CCA |
| 19 | DGreenY | | 620 | Target Green Y value for CCA |
| 20 | DBlueX | | 150 | Target Blue X value for CCA |
| 21 | DBlueY | | 60 | Target Blue Y value for CCA |
| 22 | DCyanX | | 205 | Target Cyan X value for CCA |
| 23 | DCyanY | | 270 | Target Cyan Y value for CCA |
| 24 | DMagentaX | | 290 | Target Magenta X value for CCA |
| 25 | DMagentaY | | 140 | Target Magenta Y value for CCA |
| 26 | DYellowX | | 425 | Target Yellow X value for CCA |
| 27 | DYellowY | | 515 | Target Yellow Y value for CCA |
| 28 | [COOL2] DWhiteX | | 264 | |
| 29 | [COOL2] DWhiteY | | 267 | |
| 30 | [COOL1] DWhiteX | | 269 | |
| 31 | [COOL1] DWhiteY | | 274 | |
| 32 | [NORMAL] DWhiteX | | 285 | |
| 33 | [ NORMAL] DWhiteY | | 293 | |
| 34 | [WARM1] DWhiteX | | 291 | |
| 35 | [ WARM1] DWhiteY | | 300 | |
| 36 | [WARM2] DWhiteX | | 313 | |
| 37 | [ WARM2] DWhiteY | | 329 | |

9. Cinema CCA

| No | Item | Range | Default | Remark |
|---|---|---|---|---|
| 1 | DRedX | | 640 | Target Red X value for CCA |
| 2 | DRedY | | 340 | Target Red Y value for CCA |
| 3 | DGreenX | | 300 | Target Green X value for CCA |
| 4 | DGreenY | | 620 | Target Green Y value for CCA |
| 5 | DBlueX | | 150 | Target Blue X value for CCA |
| 6 | DBlueY | | 60 | Target Blue Y value for CCA |
| 7 | DCyanX | | 205 | Target Cyan X value for CCA |
| 8 | DCyanY | | 270 | Target Cyan Y value for CCA |
| 9 | DMagentaX | | 290 | Target Magenta X value for CCA |
| 10 | DMagentaY | | 140 | Target Magenta Y value for CCA |
| 11 | DYellowX | | 425 | Target Yellow X value for CCA |
| 12 | DYellowY | | 515 | Target Yellow Y value for CCA |
| 13 | D-White-X | | 313 | Target White X value for CCA |
| 14 | D-White-Y | | 329 | Target White Y value for CCA |

10. SP Actuator

| No | Item | Range | Default | Remark |
|---|---|---|---|---|
| 1 | Actuator Gain [Patt1] | 0~175 | 95 | Actuator Gain adjustment |
| 2 | Actuator Gain [Patt2] | 0~175 | 95 | Actuator Gain adjustment |
| 3 | Actuator ON/OFF | | ON | Actuator On/Off selection |
| 4 | DB ON/OFF | ON/OFF | ON | |
| 5 | DB Gain | 0~3 | 1 | |
| 6 | DB Aperture | MIN/MAX | | |
| 7 | DB Gain | 0~255 | 0 | |

11. ESP(Enhance Smooth Picture)
xHD3/xHD4 Option(This model is not used.)

12. GM1601

| No | Item | Range | Default | Remark |
|---|---|---|---|---|
| 1 | ADC_RED_GAIN |  | 128 |  |
| 2 | ADC_GRN_GAIN |  | 128 |  |
| 3 | ADC_BLU_GAIN |  | 128 |  |
| 4 | ADC_RED_OFFSET |  | 50 |  |
| 5 | ADC_GRN_OFFSET |  | 50 |  |
| 6 | ADC_BLU_OFFSET |  | 50 |  |
| 7 | MADI_QUANT_TH0 |  | 4 |  |
| 8 | MADI_QUANT_TH1 |  | 7 |  |
| 9 | MADI_QUANT_TH2 |  | 64 |  |
| 10 | GAMMA_CONTROL |  | OFF |  |
| 11 | AUTO_COLOR |  | OFF |  |
| 12 | TEST_PATTERN |  | 0 |  |
| 13 | SP_AMP |  | 0 |  |
| 14 | SP_PERIOD |  | 0 |  |

13. OPTION

| No | Item | Range | Default | Remark |
|---|---|---|---|---|
| 1 | Lamp Clear |  |  | Initialize lamp usage time. Lamp Life is set to zero |
| 2 | User Reset |  |  | All user settings are set to default |
| 3 | WB Reset |  | OFF | Initialize the White Balance value |
| 4 | EER Reset |  |  | Clear the EEPROM |
| 5 | Lamp Life |  |  | Lamp on time counter |
| 6 | AUTO POWER |  | ON | The sets turns on automatically when the power cord is plugged in |
| 7 | DNIe Demo | ON/OFF | ON | DNIe Demo function selection |
| 8 | Lamp Control | Dynamic/Normal | Dynamic | Dynamic, Always |
| 9 | MUTE TIME |  | 400ms | Time which the screen will be black while switching channels |
| 10 | EDID WRITE |  |  |  |
| 11 | DDC Protection | ON/OFF | OFF | DDC write ON/OFF selection |
| 12 | LNA Default | Auto/OFF | Auto | LNA setting OFF/Auto selection |
| 13 | PROTECT |  | ON | Protection ON/OFF selection |
| 14 | WATCH DOG |  | OFF | Watch Dog ON/OFF selection |
| 15 | WD COUNT |  | 0 | Count for Watch Dog event |
| 16 | DEBUG MODE | ATI226/GM1601 | ATI226 |  |
| 17 | DSUB MODE |  | RS232 |  |
| 18 | BUS STOP |  | OFF |  |
| 19 | DIGITAL→DMD |  |  | To trans the CCA data form DIGITAL to DMD |
| 20 | DMD→DGITIAL |  |  | To trans the CCA data form DMD to DIGITAL |

## 14. SERVICE

| No | Item | Range | Default | Remark |
|---|---|---|---|---|
| 1 | V-Position | 0 ~ 60 | 30 | Screen upper and lower adjustment |
| 2 | H-Position | 0 ~ 120 | 60 | Screen left and right adjustments |
| 3 | LAMP SYNC | | | |
| 4 | Actuator Gain [Patt1] | 0~175 | 95 | Actuator Gain adjustment |
| 5 | Actuator Gain [Patt2] | 0~175 | 95 | Actuator Gain adjustment |
| 6 | INDEX DELAY | 0 ~ 1023 | 173 | Index delay adjustment |
| 7 | FPGA | | xHD3 | xHD3/xHD4 selection |
| 8 | Lamp Watt | | 132W | |
| 9 | Lamp Select | | Philips | |
| 10 | AUTO COLOR | | OFF | Auto Color function execution |
| 11 | CCA | | | CCA menu |
| 12 | Lamp Clear | | | Initialize Lamp usage time |
| 13 | User Reset | | | All user settings are set to default |

## 3-4 Service Adjustment

### 3-4-1 Vertical / Horizontal Position Adjustment

1. Turn off the power to put the unit into the STAND-BY mode.

2. In order to enter the Service Mode, Press "Mute" → "1" → "8" → "2" → "POWER" buttons on the Remote Control.

3. Select "Service" on the first display of the Service mode menu.

4. Select the V-position for vertical positioning and H-position for horizontal positioning by using the ▲ ▼ (Up & Down) buttons. Press the ◀ ▶ (Left or Right) buttons to adjust the screen position.

※ Do not set the V-position value to 34 or 35. (Setting to these values will cause horizontal lines on the right side of the screen.)

### 3-4-2 INDEX DELAY Adjustment

1. Turn off the power to put the unit into the STAND-BY mode.

2. In order to enter the Service Mode, Press "Mute" → "1" → "8" → "2" → "POWER" buttons on the Remote Control.

3. Select "Service" on the first display of the Service mode menu.

4. Press the ▲ ▼ (Up or Down) button to move to INDEX DELAY, then press ENTER to select.

5. The INDEX DELAY setup screen (with a red bar at the bottom of the screen) will be displayed.

6. Press the ◀ ▶ (Left of Right) buttons to adjust. Check the red color at the bottom of the screen at its minimum and maximum values of changing from red to magenta, then adjust to the mean value.

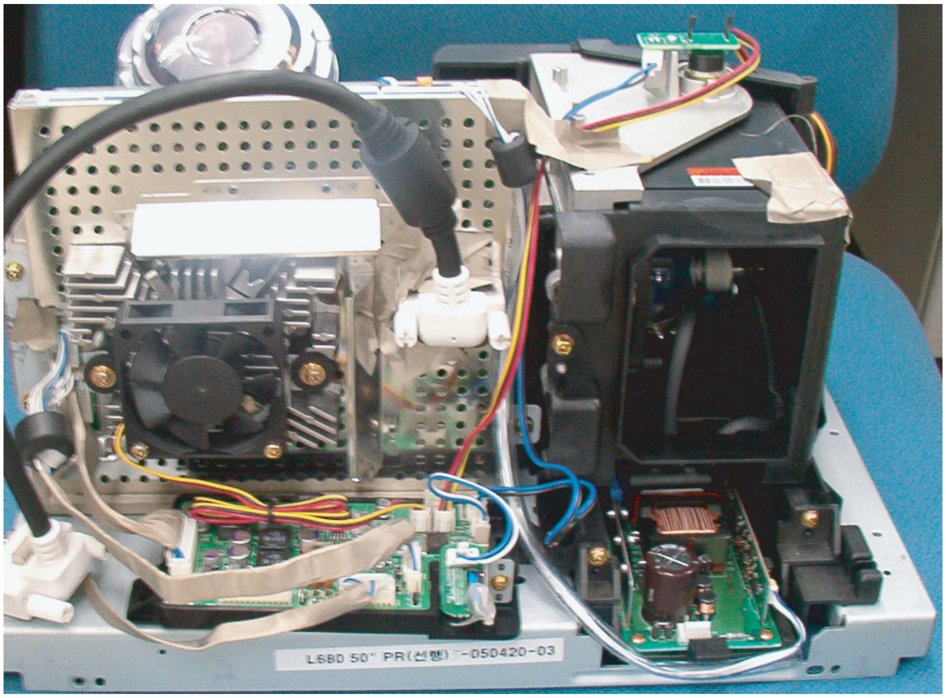
## 3-4-3 CCA Adjustment Service Methods

: CCA Adjustment is needed after changing a light engine, digital board or Color Wheel.

■ CCA : In DLP TV, even the same RGB color may differ depending on the light engine. CCA (Color Coordinate Adjustment) corrects the color to achieve the color accuracy. CCA performs color correction after measuring and inputting the current light engine's data on actual color coordinates for displayed Red, Green, Blue, and White color patterns, using color coordinate measuring equipment.

At this moment, color correction is performed on the basis of previously inputted Desired Color Coordinates and Measured Color Coordinates.

1. Condition of the Service Engine



2. CCA Service Procedures

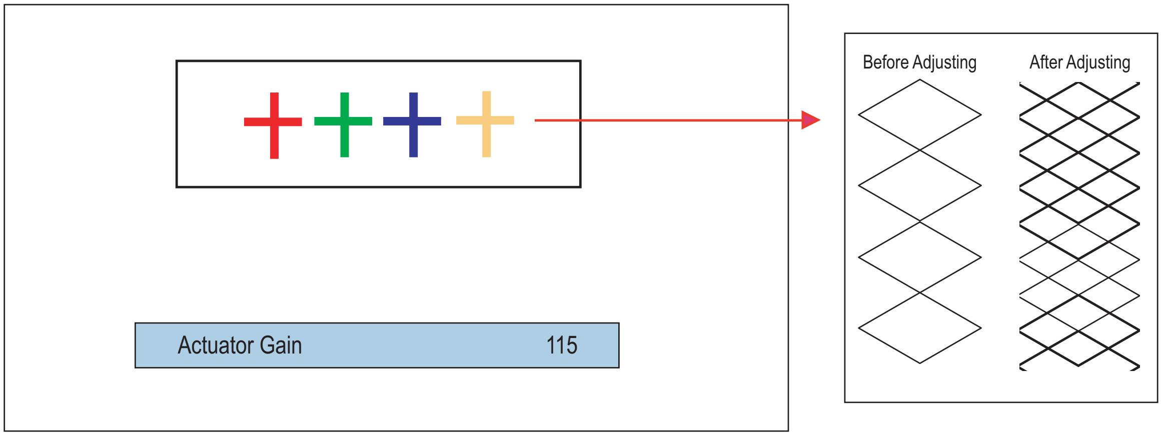
To execute CCA adjustment , perform the following steps :

1) Turn off the power to put the unit into the STAND-BY mode.
2) In order to enter the Service Mode, Press "Mute" → "1" → "8" → "2" → "POWER" buttons on the Remote Control.
3) From the Factory Service Mode Menu, select OPTION > DMD → DIGITAL. (This is for getting the cca data of new engine.)
   3-1) After Light Engine is changed
      - select OPTION > DMD → DIGITAL
   3-2) After Digital PCB is changed
      - select OPTION > DMD → DIGITAL
   3-3) After DMD PCB is changed
      - select OPTION > DIGITAL → DMD
   3-4) After color wheel is changed
      - select DDP1011 > INDEX DELAY
      (You can only adjust the INDEX DELAY. You can't adjust the CCA without CCA equipment(CA210).)

## 3-4-4 ACTUATOR GAIN Adjustment

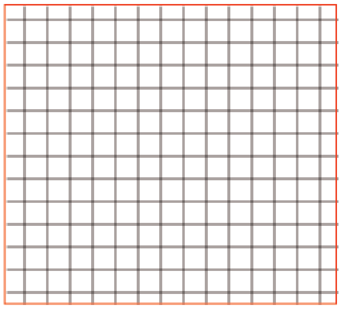
1. Before Adjustment
   1) Turn off the power to put the unit into the STAND-BY mode.
   2) In order to enter the Service Mode, Press "Mute" → "1" → "8" → "2" → "POWER" button on the Remote Control.
   3) Select "Service" on the first display of the Service mode menu.
   4) Press the ▲ ▼ (Up or Down) button to move to ACTUATOR GAIN1,2, then press ENTER to select.

- Actuator Gain1 : In case of controlling with Cross Pattern.



- Actuator Gain2 : In case of controlling with Crosshatch Pattern.

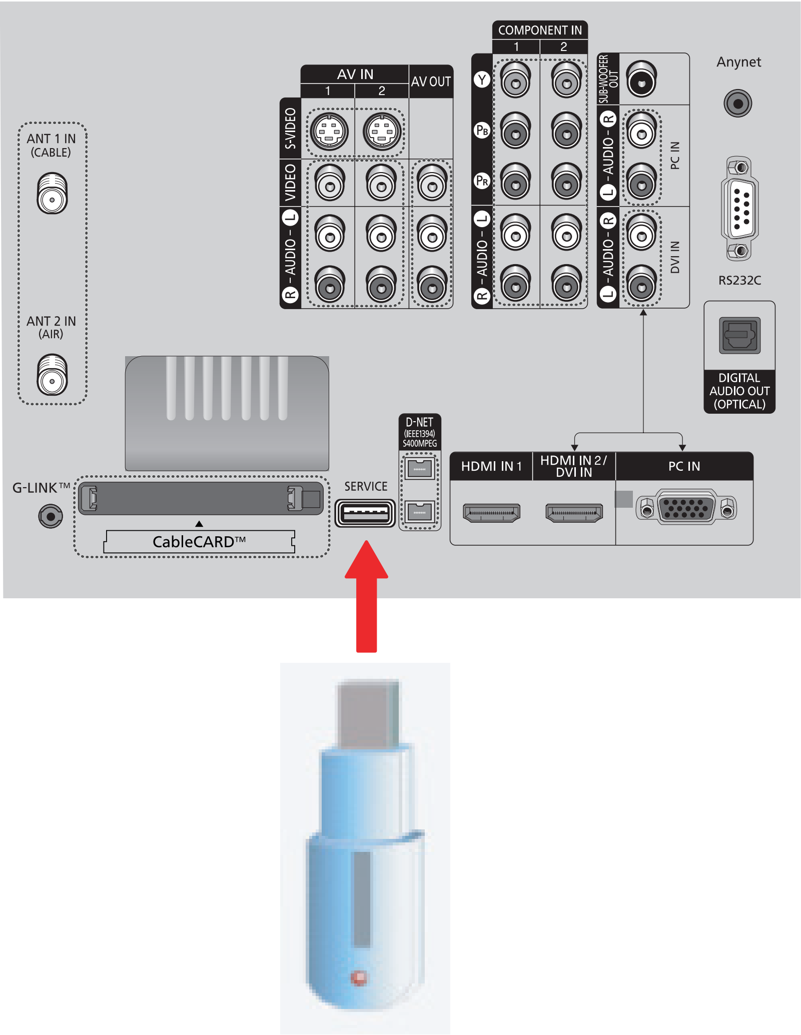
CROSSHATCH PATTERN



CAUSTION: GAIN2 is just controlled by your eye because control value doesn't appear In picture.

2. Making Adjustments
   1) As shown in the picture above, change the actuator values to eliminate saw tooth shapes.
      - To fine tune, increase the data value ensuring that you get the center between the starting and ending points of the disappearing saw tooth shape.

## 3-5 Software Upgrade


ANT 1 IN
(CABLE)
ANT 2 IN
(AIR)
AV IN
1
2
AV OUT
S-VIDEO
VIDEO
R - AUDIO - L
COMPONENT IN
1
2
Y
PB
PR
R - AUDIO - L
SUB-WOOFER OUT
L - AUDIO - R
PC IN
L - AUDIO - R
DVI IN
Anynet
RS232C
DIGITAL AUDIO OUT (OPTICAL)
D-NET (IEEE1394) S400MPEG
HDMI IN 1
HDMI IN 2 / DVI IN
PC IN
G-LINK™
SERVICE
CableCARD™

1. Prepare the USB memory stick with the built-in firmware.

2. While the TV is off, insert the USB stick into the SERVICE terminal.

3. When turning on the TV, there should be a long beeping tone and the firmware download process should start. If there is no sound from the TV, turn it off and then on again.

4. When the download is complete, there will be another long beeping tone and the TV will go into standby mode.

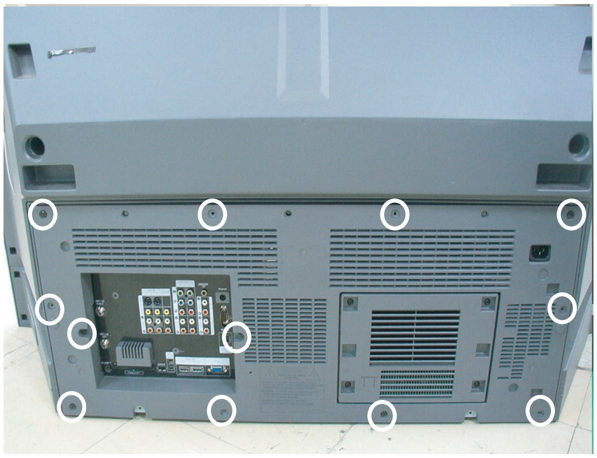
※ Check for the Firmware Version
1) Turn off the power to put the unit into the STAND-BY mode.
2) In order to enter the Service Mode, Press "Mute" → "1" → "8" → "2" → "POWER" buttons on the Remote Control.
3) In case entry into SERVICE MODE is unsuccessful, repeat steps 1 and 2 directly above.
4) You can check the firmware version at the bottom of the Factory menu.

**T_EXCAAUSO_00XX**
**2005_XX_XX**
**T-DTVUCOM5-00XX**
**T-XMENAUS0_00XX**

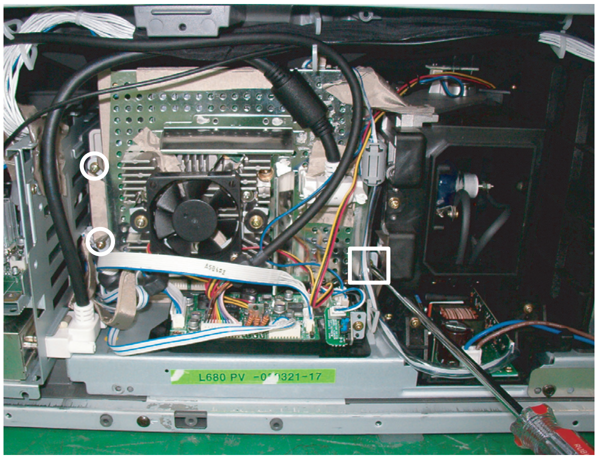
## 3-6 Replacements & Calibration

### 3-6-1 Tilt the Screen

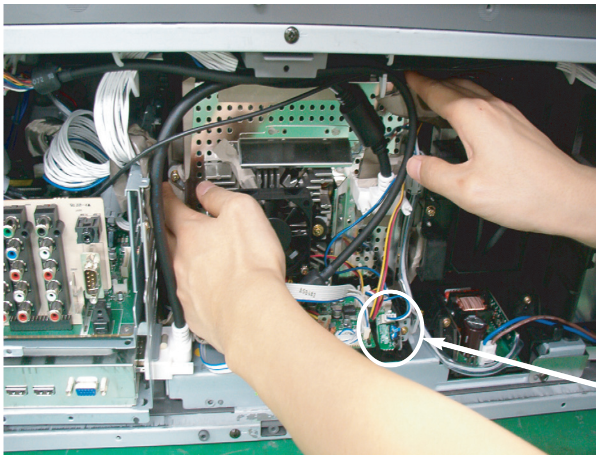
1. Remove the 12 point screws. Remove the Bottom cover. Fix the safety switch on the right with tape so that the set can be turned on after removing the bottom cover.
   : TH,B,M4.L15,BLK,SWRCH18A



2. Remove the 3 points screws.
   - * Left 2 points screws
     : PWH,S,M3,L8,ZPC(YEL),SWRCH18A
   - * Right 1 points screw
     : PWH,S,M3,L7,ZPC(YEL),SWRCH18A

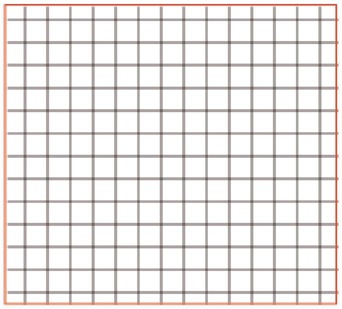


3. Turn off the power to put the unit into the STAND-BY mode.
   In order to enter the Service Mode, Press "Mute" → "1" → "8" → "2" → "POWER" buttons on the Remote Control.
   Select "DDP1011(L8)" on the first display of the Service Mode menu. Press the ▲▼ (Up or Down) buttons, then press ENTER to select. Press the ▶ (Right) button until you see the CROSSHATCH PATTERN.
   Then, adjust the screen position, by holding both of the upper corners of the DMD board.



Fix the safety switch on the right with tape so that the set can be turned on after removing the bottom cover.

CROSSHATCH PATTERN



※ Even when those screws are removed, the board does not separate it can be moved within the adjustable range because there are spring screws at the center holding it.

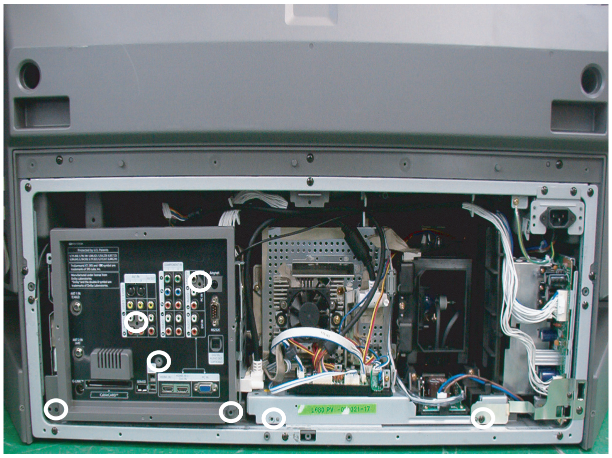
※ When adjusting the screen, it is better for two people to work together.
One person should adjust the picture position while the other person looks at the screen.

※ The movement direction of the board and the picture are opposite.
- When the board is lifted upward, the screen descends down.
- When it is tilted to the left, the screen tilts to the right.

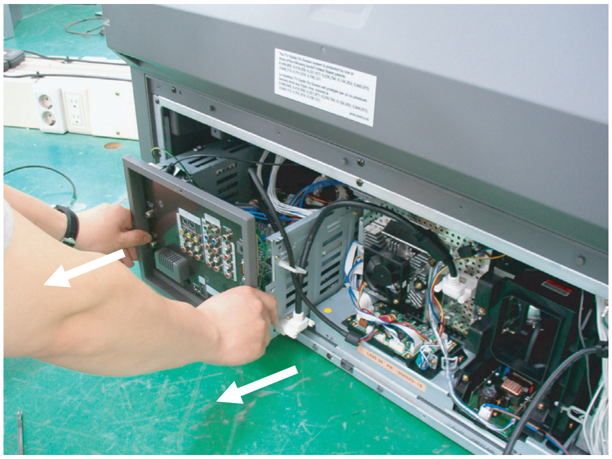
※ When the picture adjustment is completed:
First, tighten the two screws on the left of the DMD board and then slowly tighten the one screw on the bottom right.
Be careful not to touch the board while tightening the screws.
(When using an electric-powered screwdriver, be careful that the torque is not too high.)

## 3-6-2 Align the Focus

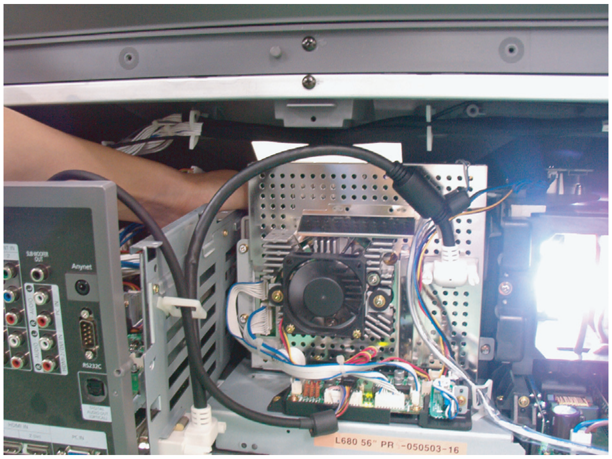
1. Remove the 7 screws.
   : TH,B,M4.L15,BLK,SWRCH18A



2. Pull out the holder Chassis



3. Adjust the Lens Focus

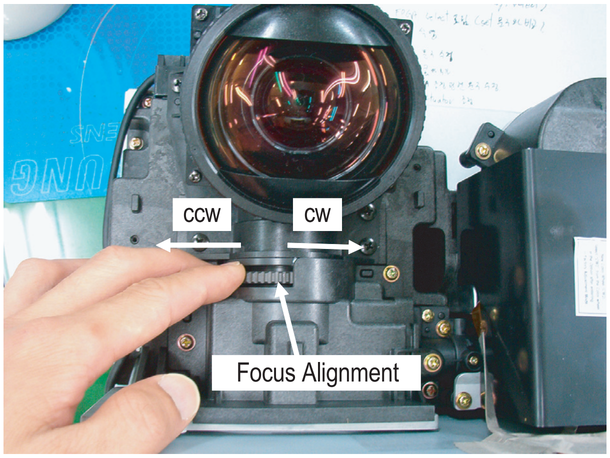


1) Input a Crosshatch pattern or enter service mode and use the internal generated patterns.

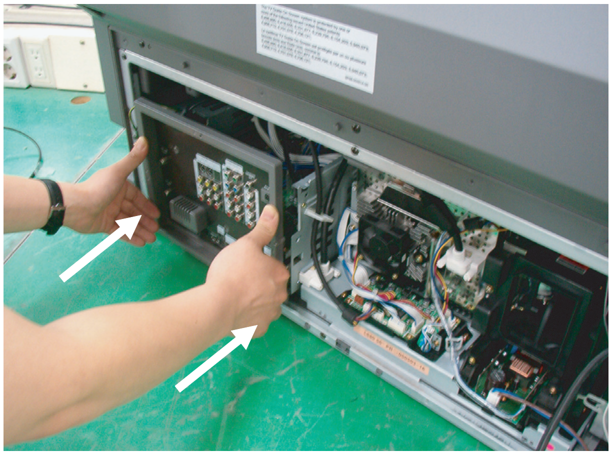
2) Adjust the focus alignment dial of the Projection Lens Clockwise or Counter Clockwise (See picture in step 4) until the picture is clear.

3) Since the alignment is done from the rear use a mirror or a second person to confirm the adjustment is complete.

4. Adjust the Lens focus.



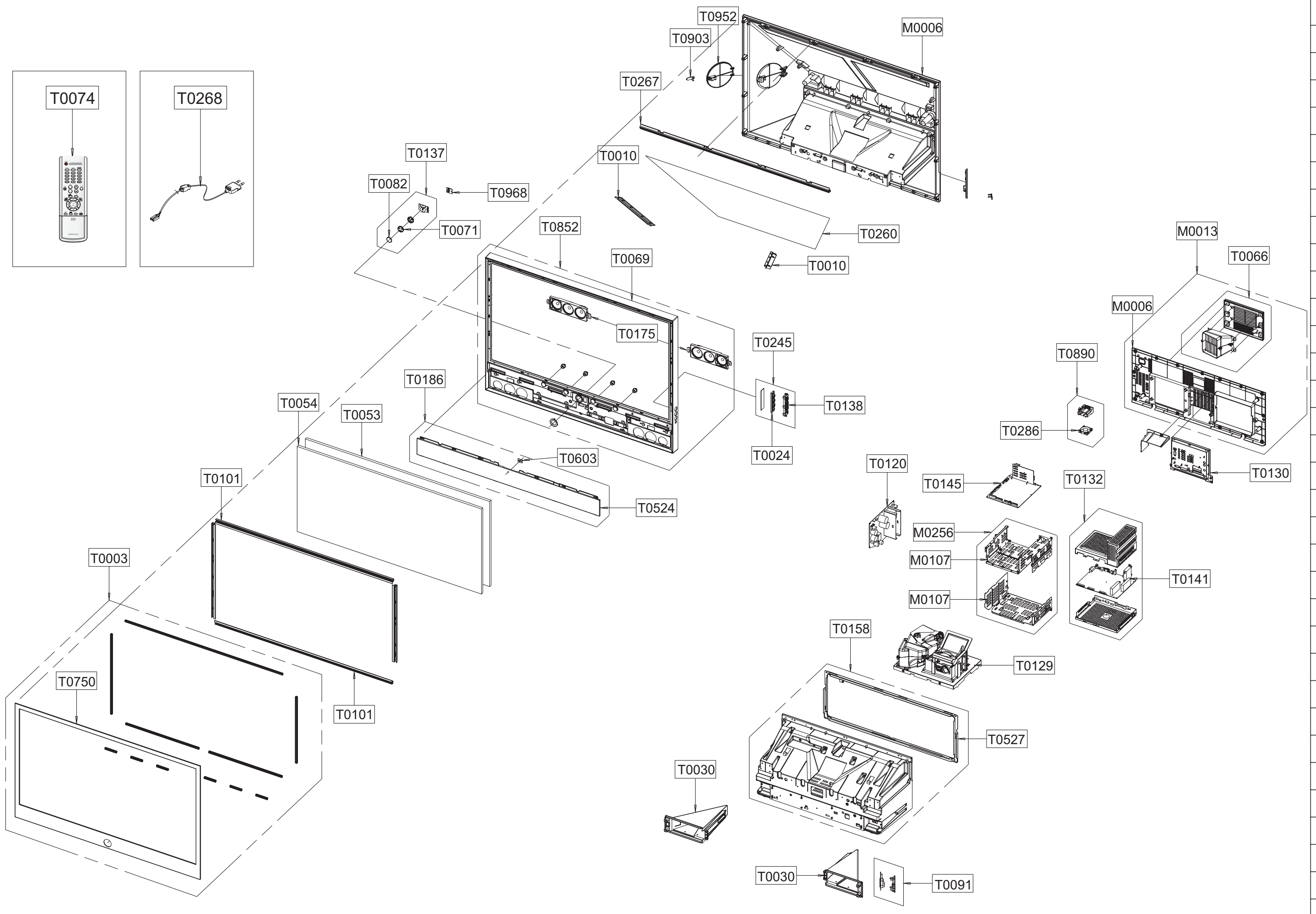
5. Insert Engine Ass'y with accuracy.



# 4. Exploded View & Part List

## 4-1 HLR5078WX/XAA

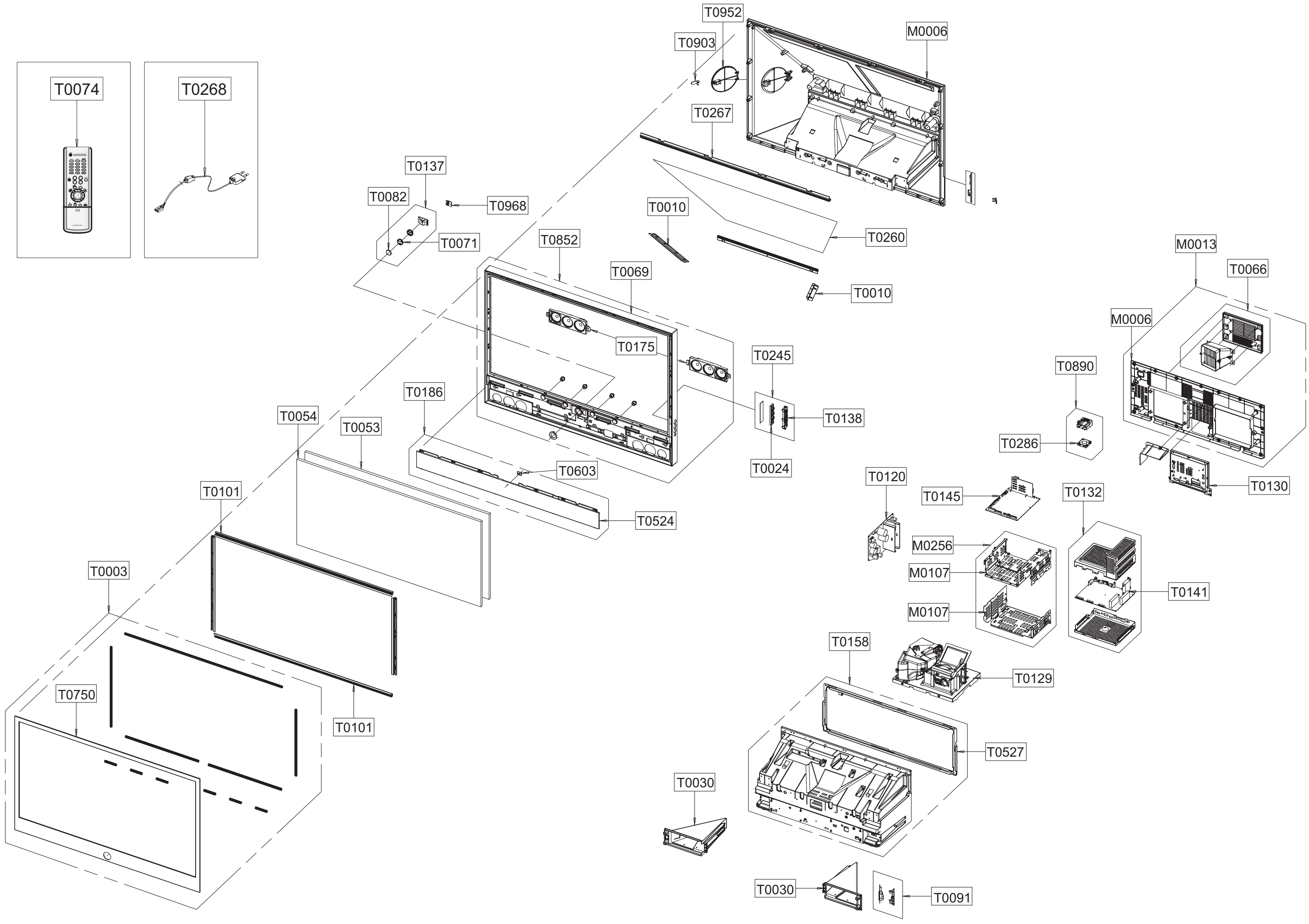
Yon can search for the updated part code through ITSELF web site.
URL:http://itself.sec.samsung.co.kr



| Loc.No. | Code No. | Description | Specification | Q'ty | SA/SNA | Remark |
|---|---|---|---|---|---|---|
| M0006 | BP63-00410A | COVER-REAR | 50L6,HIPS,HB,GR503,TOP | 1 | S.A | |
| M0006 | BP63-00401A | COVER-REAR BOTTOM | 50L6,HIPS,V0,GRAY | 1 | S.N.A | |
| M0013 | BP96-00938C | ASSY COVER P-REAR BOTTOM | L6,HIPS V0,GR50 | 1 | S.A | |
| M0107 | BP61-00892A | BRACKET-PCB | 50L3,SECC,T1.0,NTR,TOP(BUILT | 1 | S.N.A | |
| M0107 | BP61-00893A | BRACKET-PCB | 50L3,SECC,T1.0,NTR,BOT(BUILT | 1 | S.N.A | |
| M0256 | BP96-00849F | ASSY BRACKET P-MAIN PCB | L3,L6,L7,SECC,T1 | 1 | S.A | |
| T0003 | BP96-01058A | ASSY COVER P-FRONT | 50L8,ABS+PMMA,HB,BK23 | 1 | S.A | |
| T0010 | BP96-00940A | ASSY HOLDER P-MIRROR LEFT | L6 ALL, L8,HIP | 1 | S.A | |
| T0010 | BP96-00941A | ASSY HOLDER P-MIRROR RIGHT | L6 ALL, L8,HI | 1 | S.A | |
| T0024 | BP64-00384B | KNOB-FAMILY | L6,ABS,HB,GRAY,SVM-3012 | 1 | S.N.A | |
| T0030 | BP96-01059A | ASSY COVER P-SIDE | 50L8,HIPS,HB,GR503,LEF | 1 | S.A | |
| T0030 | BP96-01060A | ASSY COVER P-SIDE | 50L8,HIPS HB,GR503,RIG | 1 | S.A | |
| T0053 | BP67-00140A | SCREEN FRESNEL | 50W,1126*646,1.5T | 1 | S.A | |
| T0054 | BP67-00137A | SCREEN LENTI | 50W,1126*646,2.4T | 1 | S.A | |
| T0066 | BP96-00535E | ASSY COVER P-DUCT | L6,HIPS HB,GRY | 1 | S.N.A | |
| T0069 | BP63-00465A | COVER-MIDDLE | 50L8,HIPS,HB,GRAY | 1 | S.N.A | |
| T0071 | BP64-00532A | INDICATOR-LED | L8,ABS,HB,BLK | 1 | S.A | |
| T0074 | BP59-00071B | REMOCON | HURRICANE,TM76A,200*54*30,ZILOG | 1 | S.A | |
| T0082 | BP64-00309B | WINDOW LED | 50L3,ACRYL,2.0,half-mirror,SE | 1 | S.N.A | |
| T0091 | BP94-02231A | ASSY PCB MISC-A/V SIDE | HLR5078(L8),L65A, | 1 | S.N.A | |
| T0101 | BP61-00960A | BRACKET-SCREEN TB | 50L8,AL6063 EXTR | 1 | S.N.A | |
| T0101 | BP61-00960A | BRACKET-SCREEN TB | 50L8,AL6063 EXTR | 1 | S.N.A | |
| T0120 | BP94-02215B | ASSY PCB POWER | HLR5067,HURRICANE,L64B,11 | 1 | S.A | |
| T0129 | BP96-01198A | ASSY ENGINE P-DLP | 50L8,PHILIPS 120W,E22 | 1 | S.A | |
| T0130 | BP96-01061A | ASSY COVER P-TERMINAL BOARD | 50L8,HIPS V0 | 1 | S.N.A | |
| T0132 | BP94-02229A | ASSY PCB MISC-DIGITAL | HLR5078(L8),L65A,E | 1 | S.A | |
| T0137 | BP94-01758A | ASSY PCB MISC-LED | HLR5078WX/XAA,L65A,EXC | 1 | S.N.A | |
| T0138 | BP64-00383B | KNOB-HOLDER | L6,ABS,HB,GRAY,SVM3012 | 1 | S.N.A | |
| T0141 | BP97-00961A | ASSY SMD-DIGITAL | HLR5078(L8),L65A,EXCALI | 1 | S.N.A | |
| T0145 | BP94-02228A | ASSY PCB MISC-ANALOG | HLR5078(L),L65A,EXC | 1 | S.A | |
| T0158 | BP96-00937C | ASSY COVER P-MAIN | L6 ALL,HIPS, V0,GR503 | 1 | S.A | |
| T0175 | AA96-02816A | ASSY SPEAKER P | 8ohm,L6(DLP),50,20W,TW+WF | 2 | S.A | |
| T0186 | BP96-01056A | ASSY COVER P-GRILLE | 50L8,HIPS HB,GR503,S | 1 | S.N.A | |
| T0245 | BP94-01712C | ASSY PCB MISC-KEY CONTROL | 50,56,L65A,EXC | 1 | S.N.A | |
| T0260 | BP67-00096A | MIRROR | MIRROR FRONT 50",GLASS,1100X580X5 | 1 | S.A | |
| T0267 | BP61-00910A | BRACKET-MIRROR TOP | 50L6,AL6063 EXTR | 1 | S.N.A | |
| T0268 | 3903-000144 | CBF-POWER CORD | DT,US,BP3/Y,U(IEC C13-RA) | 1 | S.A | |
| T0286 | BP31-00019A | FAN-DC | F5010L12B2-RS WS,ROBOCOP,PBTP (UL | 1 | S.A | |
| T0524 | BP63-00466A | COVER-GRILLE | 50L8,HIPS,HB,GRAY | 1 | S.N.A | |
| T0527 | BP61-01045A | BRACKET-COVER | L6,SECC-1,T1.2,NTR,BOTTOM | 1 | S.N.A | |
| T0603 | BP64-00530A | WINDOW-RMC | L8,ACRYL,,DIFFUSER 0.2% | 1 | S.N.A | |
| T0750 | BP63-00464A | COVER-MASK | 50L8,ABS+PMMA,HB,BK23,STEAM-M | 1 | S.N.A | |
| T0852 | BP96-01057A | ASSY COVER P-MIDDLE | 50L8,HIPS HB,GR503,S | 1 | S.N.A | |
| T0890 | BP96-00855A | ASSY FAN P | 1B1S,50*50*0.5,1.9,0.19,24,-1 | 1 | S.N.A | |
| T0903 | BP61-00528A | HOLDER-DUST | 50L3,HIPS HB,GRAY | 2 | S.N.A | |
| T0952 | BP63-00294B | COVER DUST-ASSY | L6,HIPS,HB,GRAY | 2 | S.N.A | |
| T0968 | BP94-01759A | ASSY PCB MISC-REMOCON | HLR5078(L8),L65A,E | 1 | S.N.A | |

## 4-2 HLR5678WX/XAA

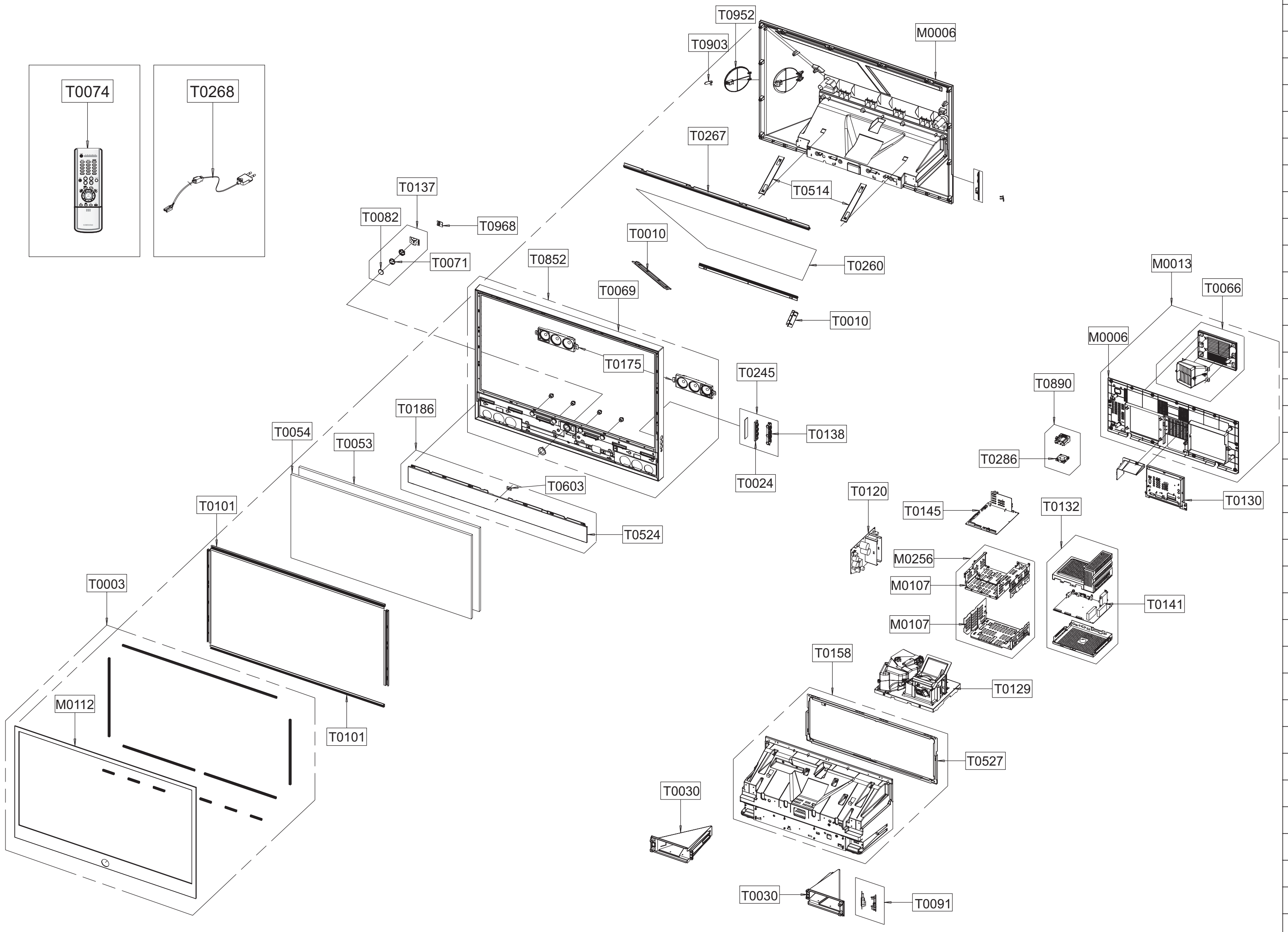
Yon can search for the updated part code through ITSELF web site.
URL:http://itself.sec.samsung.co.kr



| Loc.No. | Code No. | Description | Specification | Q'ty | SA/SNA | Remark |
|---|---|---|---|---|---|---|
| M0006 | BP63-00417A | COVER-REAR | 56L6,HIPS,HB,GRAY,TOP | 1 | S.N.A | |
| M0006 | BP63-00401A | COVER-REAR BOTTOM | 50L6,HIPS,V0,GRAY | 1 | S.N.A | |
| M0013 | BP96-00938C | ASSY COVER P-REAR BOTTOM | L6,HIPS V0,GR50 | 1 | S.A | |
| M0107 | BP61-00892A | BRACKET-PCB | 50L3,SECC,T1.0,NTR,TOP(BUILT | 1 | S.N.A | |
| M0107 | BP61-00893A | BRACKET-PCB | 50L3,SECC,T1.0,NTR,BOT(BUILT | 1 | S.N.A | |
| M0256 | BP96-00849F | ASSY BRACKET P-MAIN PCB | L3,L6,L7,SECC,T1 | 1 | S.A | |
| T0003 | BP96-01213A | ASSY COVER P-FRONT | 56L8,ABS+PMMA,HB,BK23 | 1 | S.A | |
| T0010 | BP96-00940A | ASSY HOLDER P-MIRROR LEFT | L6 ALL, L8,HIP | 1 | S.A | |
| T0010 | BP96-00941A | ASSY HOLDER P-MIRROR RIGHT | L6 ALL, L8,HI | 1 | S.A | |
| T0024 | BP64-00384B | KNOB-FAMILY | L6,ABS,HB,GRAY,SVM-3012 | 1 | S.N.A | |
| T0030 | BP96-01219A | ASSY COVER P-SIDE | 56L8,HIPS HB,GR503,L | 1 | S.A | |
| T0030 | BP96-01220A | ASSY COVER P-SIDE | 56L8,HIPS HB,GR503,RIG | 1 | S.A | |
| T0053 | BP67-00184A | SCREEN FRESNEL | 56W,1270*728,T1.5 | 1 | S.A | |
| T0054 | BP67-00183A | SCREEN LENTI | 56W,1270*728,T2.5 | 1 | S.A | |
| T0066 | BP96-00535E | ASSY COVER P-DUCT | L6,HIPS HB,GRY | 1 | S.N.A | |
| T0069 | BP63-00472A | COVER-MIDDLE | 56L8,HIPS,HB,GRAY | 1 | S.A | |
| T0071 | BP64-00532A | INDICATOR-LED | L8,ABS,HB,BLK | 1 | S.A | |
| T0074 | BP59-00071B | REMOCON | HURRICANE,TM76A,200*54*30,ZILOG | 1 | S.A | |
| T0082 | BP64-00309B | WINDOW LED | 50L3,ACRYL,2.0,half-mirror,SE | 1 | S.N.A | |
| T0091 | BP94-02231A | ASSY PCB MISC-A/V SIDE | HLR5078(L8),L65A, | 1 | S.N.A | |
| T0101 | BP61-00965A | BRACKET-SCREEN TB | 56L8,AL6063 EXTR | 1 | S.N.A | |
| T0101 | BP61-00965A | BRACKET-SCREEN TB | 56L8,AL6063 EXTR | 1 | S.N.A | |
| T0120 | BP94-02215B | ASSY PCB POWER | HLR5067,HURRICANE,L64B,11 | 1 | S.A | |
| T0129 | BP96-01198B | ASSY ENGINE P-DLP | 56L8,PHILIPS 120W,E22 | 1 | S.A | |
| T0130 | BP96-01061A | ASSY COVER P-TERMINAL BOARD | 50L8,HIPS V0 | 1 | S.N.A | |
| T0132 | BP94-02229A | ASSY PCB MISC-DIGITAL | HLR5078(L8),L65A,E | 1 | S.A | |
| T0137 | BP94-01758A | ASSY PCB MISC-LED | HLR5078WX/XAA,L65A,EXC | 1 | S.N.A | |
| T0138 | BP64-00383B | KNOB-HOLDER | L6,ABS,HB,GRAY,SVM3012 | 1 | S.N.A | |
| T0141 | BP97-00961A | ASSY SMD-DIGITAL | HLR5078(L8),L65A,EXCALI | 1 | S.N.A | |
| T0145 | BP94-02228A | ASSY PCB MISC-ANALOG | HLR5078(L),L65A,EXC | 1 | S.A | |
| T0158 | BP96-00937C | ASSY COVER P-MAIN | L6 ALL,HIPS, V0,GR503 | 1 | S.A | |
| T0175 | AA96-02816A | ASSY SPEAKER P | 8ohm,L6(DLP),50,20W,TW+WF | 2 | S.A | |
| T0186 | BP96-01217A | ASSY COVER P-GRILLE | 56L8,HIPS,HB,GR503,S | 1 | S.N.A | |
| T0245 | BP94-01712C | ASSY PCB MISC-KEY CONTROL | 50,56,L65A,EXC | 1 | S.N.A | |
| T0260 | BP67-00097A | MIRROR | Front Mirror 56",GLASS,1279X650X6 | 1 | S.A | |
| T0267 | BP61-00913A | BRACKET-MIRROR TOP | 56L6,AL6063 EXTR | 1 | S.N.A | |
| T0268 | 3903-000144 | CBF-POWER CORD | DT,US,BP3/Y,U(IEC C13-RA) | 1 | S.A | |
| T0286 | BP31-00019A | FAN-DC | F5010L12B2-RS WS,ROBOCOP,PBTP (UL | 1 | S.A | |
| T0524 | BP63-00473A | COVER-GRILLE | 56L8,HIPS,HB,GRAY | 1 | S.A | |
| T0527 | BP61-01045A | BRACKET-COVER | L6,SECC-1,T1.2,NTR,BOTTOM | 1 | S.N.A | |
| T0603 | BP64-00530A | WINDOW-RMC | L8,ACRYL,,DIFFUSER 0.2% | 1 | S.N.A | |
| T0750 | BP63-00471A | COVER-MASK | 56L8,ABS,HB,GRAY | 1 | S.A | |
| T0852 | BP96-01215A | ASSY COVER P-MIDDLE | 56L8,HIPS,HB,GR503,S | 1 | S.N.A | |
| T0890 | BP96-00855A | ASSY FAN P | 1B1S,50*50*0.5,1.9,0.19,24,-1 | 1 | S.N.A | |
| T0903 | BP61-00528A | HOLDER-DUST | 50L3,HIPS HB,GRAY | 2 | S.N.A | |
| T0952 | BP63-00294B | COVER DUST-ASSY | L6,HIPS,HB,GRAY | 2 | S.N.A | |
| T0968 | BP94-01759A | ASSY PCB MISC-REMOCON | HLR5078(L8),L65A,E | 1 | S.N.A | |

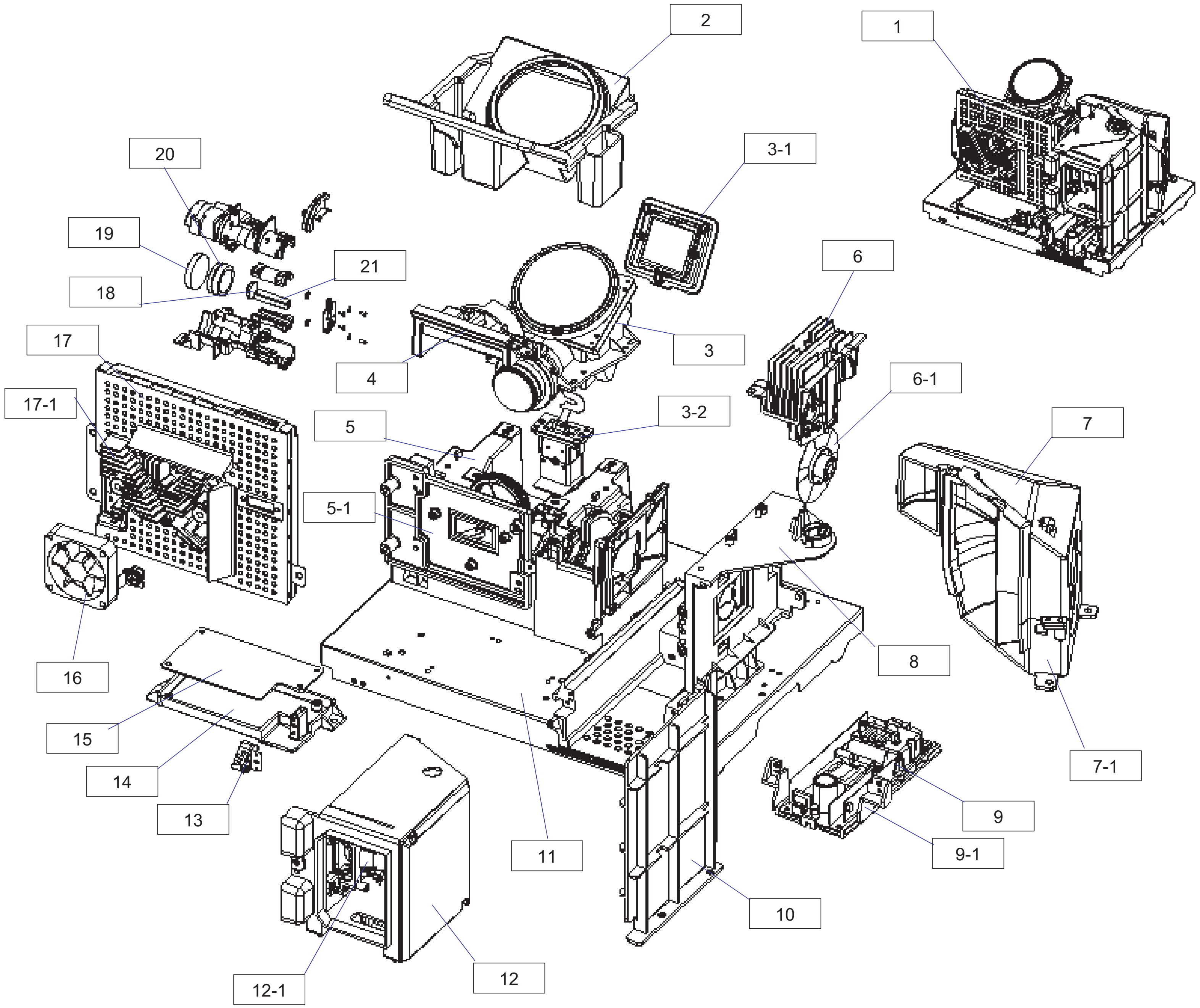
## 4-3 HLR6178WX/XAA

Yon can search for the updated part code through ITSELF web site.
URL:http://itself.sec.samsung.co.kr



| Loc.No. | Code No. | Description | Specification | Q'ty | SA/SNA | Remark |
|---|---|---|---|---|---|---|
| M0006 | BP63-00424A | COVER-REAR | 61L6,HIPS,HB,GRAY,TOP | 1 | S.A | |
| M0006 | BP63-00401A | COVER-REAR BOTTOM | 50L6,HIPS,V0,GRAY | 1 | S.N.A | |
| M0013 | BP96-00938C | ASSY COVER P-REAR BOTTOM | L6,HIPS V0,GR50 | 1 | S.A | |
| M0107 | BP61-00892A | BRACKET-PCB | 50L3,SECC,T1.0,NTR,TOP(BUILT | 1 | S.N.A | |
| M0107 | BP61-00893A | BRACKET-PCB | 50L3,SECC,T1.0,NTR,BOT(BUILT | 1 | S.N.A | |
| M0112 | BP63-00474A | COVER-FRONT | 61L8,ABS,HB,GRAY | 1 | S.N.A | |
| M0256 | BP96-00849F | ASSY BRACKET P-MAIN PCB | L3,L6,L7,SECC,T1 | 1 | S.A | |
| T0003 | BP96-01214A | ASSY COVER P-FRONT | 61L8,ABS+PMMA,HB,BK23 | 1 | S.A | |
| T0010 | BP96-00940A | ASSY HOLDER P-MIRROR LEFT | L6 ALL, L8,HIP | 1 | S.A | |
| T0010 | BP96-00941A | ASSY HOLDER P-MIRROR RIGHT | L6 ALL, L8,HI | 1 | S.A | |
| T0024 | BP64-00384B | KNOB-FAMILY | L6,ABS,HB,GRAY,SVM-3012 | 1 | S.N.A | |
| T0030 | BP96-01221A | ASSY COVER P-SIDE | 61L8,HIPS HB,GR503,LEF | 1 | S.A | |
| T0030 | BP96-01222A | ASSY COVER P-SIDE | 61L8,HIPS HB,GR503,RIG | 1 | S.A | |
| T0053 | BP67-00165A | SCREEN FRESNEL | 61W,1381*790,1.5T | 1 | S.A | |
| T0054 | BP67-00164A | SCREEN LENTI | 61W,1381*790,T2.5 | 1 | S.A | |
| T0066 | BP96-00535E | ASSY COVER P-DUCT | L6,HIPS HB,GRY | 1 | S.N.A | |
| T0069 | BP63-00475A | COVER-MIDDLE | 61L8,HIPS,HB,GRAY | 1 | S.N.A | |
| T0071 | BP64-00532A | INDICATOR-LED | L8,ABS,HB,BLK | 1 | S.A | |
| T0074 | BP59-00071B | REMOCON | HURRICANE,TM76A,200*54*30,ZILOG | 1 | S.A | |
| T0082 | BP64-00309B | WINDOW LED | 50L3,ACRYL,2.0,half-mirror,SE | 1 | S.N.A | |
| T0091 | BP94-02231A | ASSY PCB MISC-A/V SIDE | HLR5078(L8),L65A, | 1 | S.N.A | |
| T0101 | BP61-00968A | BRACKET-SCREEN TB | 61L8,AL6063 EXTR | 1 | S.N.A | |
| T0101 | BP61-00968A | BRACKET-SCREEN TB | 61L8,AL6063 EXTR | 1 | S.N.A | |
| T0120 | BP94-02215B | ASSY PCB POWER | HLR5067,HURRICANE,L64B,11 | 1 | S.A | |
| T0129 | BP96-01198C | ASSY ENGINE P-DLP | 61L8,PHILIPS 120W,E22 | 1 | S.A | |
| T0130 | BP96-01061A | ASSY COVER P-TERMINAL BOARD | 50L8,HIPS V0 | 1 | S.N.A | |
| T0132 | BP94-02229A | ASSY PCB MISC-DIGITAL | HLR5078(L8),L65A,E | 1 | S.A | |
| T0137 | BP94-01758A | ASSY PCB MISC-LED | HLR5078WX/XAA,L65A,EXC | 1 | S.N.A | |
| T0138 | BP64-00383B | KNOB-HOLDER | L6,ABS,HB,GRAY,SVM3012 | 1 | S.N.A | |
| T0141 | BP97-00961A | ASSY SMD-DIGITAL | HLR5078(L8),L65A,EXCALI | 1 | S.N.A | |
| T0145 | BP94-02228A | ASSY PCB MISC-ANALOG | HLR5078(L),L65A,EXC | 1 | S.A | |
| T0158 | BP96-00937C | ASSY COVER P-MAIN | L6 ALL,HIPS, V0,GR503 | 1 | S.A | |
| T0175 | AA96-02816A | ASSY SPEAKER P | 8ohm,L6(DLP),50,20W,TW+WF | 2 | S.A | |
| T0186 | BP96-01218A | ASSY COVER P-GRILLE | 61L8,HIPS,HB,GR503,S | 1 | S.N.A | |
| T0245 | BP94-01712D | ASSY PCB MISC-KEY CONTROL | 61",L65A,EXCAL | 1 | S.N.A | |
| T0260 | BP67-00098A | MIRROR | FRONT MIRROR 61",GLASS,34.85MM,13 | 1 | S.A | |
| T0267 | BP61-00937A | BRACKET-MIRROR TOP | 61L6,AL6063 EXTR | 1 | S.N.A | |
| T0268 | 3903-000144 | CBF-POWER CORD | DT,US,BP3/Y,U(IEC C13-RA) | 1 | S.A | |
| T0286 | BP31-00019A | FAN-DC | F5010L12B2-RS WS,ROBOCOP,PBTP (UL | 1 | S.A | |
| T0514 | BP61-00918A | BRACKET-SUPPORT | 61L6,SECC-1,T1.6,NTR | 2 | S.N.A | |
| T0524 | BP63-00476A | COVER-GRILLE | 61L8,HIPS,HB,GRAY | 1 | S.N.A | |
| T0527 | BP61-01045A | BRACKET-COVER | L6,SECC-1,T1.2,NTR,BOTTOM | 1 | S.N.A | |
| T0603 | BP64-00530A | WINDOW-RMC | L8,ACRYL,,DIFFUSER 0.2% | 1 | S.N.A | |
| T0852 | BP96-01216A | ASSY COVER P-MIDDLE | 61L8,HIPS,HB,GR503,S | 1 | S.N.A | |
| T0890 | BP96-00855A | ASSY FAN P | 1B1S,50*50*0.5,1.9,0.19,24,-1 | 1 | S.N.A | |
| T0903 | BP61-00528A | HOLDER-DUST | 50L3,HIPS HB,GRAY | 2 | S.N.A | |
| T0952 | BP63-00294B | COVER DUST-ASSY | L6,HIPS,HB,GRAY | 2 | S.N.A | |
| T0968 | BP94-01759A | ASSY PCB MISC-REMOCON | HLR5078(L8),L65A,E | 1 | S.N.A | |

## 4-4 L680 Engine Ass'y



L680 Engine Exploded View List

| No. | Loc. No. | Code No. | Description | Specification | Q'ty | SA/SNA |
|---|---|---|---|---|---|---|
| 1 | T0129 | BP96-01198A | ASSY ENGINE P-DLP | 50L8,PHILIPS 120W,E22 | 1 | S.A |
| 2 |  | BP63-00522A | COVER-P-J LENS | L680,ABS,T2.5 | 1 | S.N.A |
| 3 |  | BP67-00222A | LENS-P/J-ASSY | Excalibur,GLASS,NTR,FOV=93 | 1 | S.N.A |
| 3-1 |  | BP64-00548A | GLASS-ACTUATOR | EXCALIBUR,MIRROR,39,34,VC | 1 | S.N.A |
| 3-2 |  | BP96-00984A | ASSY DYNAMIC BLACK P-SEM | Dynamic Black,S | 1 | S.N.A |
| 4 |  | BP63-00520A | COVER-MIRROR | L680,PC G/F20,T2.5 | 1 | S.N.A |
| 5 |  | BP61-01033A | BASE-ENGINE | L680,PPS G/F30,T3.0 | 1 | S.N.A |
| 5-1 |  | BP61-01037A | BASE-ENGINE | L680,MG D/C,T3.0,TOP | 1 | S.N.A |
| 6 |  | BP96-01103A | ASSY COLOR WHEEL P | L6,SERVICE | 1 | S.A |
| 6-1 | T0593 | BP64-00475A | GLASS-COLOR WHEEL | 65mm NDF,FLOAT GLASS,T | 1 | S.N.A |
| 7 | T0530 | BP63-00510A | COVER-LAMP | SVP-50L6HR,PPS G/F30,T2.5 | 1 | S.N.A |
| 7-1 |  | BP63-00517A | COVER-DUCT BOT | SVP-50L6HR,PC G/F20,T3.0 | 1 | S.N.A |
| 8 |  | BP61-00726A | HOUSING-LAMP,BOTTOM 23 | SVP-50L3HR,AL D/ | 1 | S.N.A |
| 9 | T0049 | BP47-00021A | LAMP-BALLAST | EUC 120 P/H11,120W,130mm ca | 1 | S.A |
| 9-1 |  | BP61-00728A | HOLDER-BALLAST 23 | SVP-50L3HR,PC G/F20 | 1 | S.N.A |
| 10 | T0530 | BP63-00537A | COVER-LAMP | HURRICANE 720P,PC | 1 | S.N.A |
| 11 |  | BP61-01014A | BRACKET-ENGINE BASE | SVP-50L6HR,SECC,T1.6 | 1 | S.N.A |
| 12 |  | BP96-01073A | ASSY LAMP P | L6,L8(L620,L680),~ 61",Philips 120W | 1 | S.A |
| 12-1 |  | BP47-00018A | LAMP | UHP 100W/120W 1.0,E22,65*70 | 1 | S.N.A |
| 13 |  | BP91-00775A | ASSY MISC-DETECTOR S/W | HLP5063WX/XAA,L62 | 1 | S.N.A |
| 14 |  | BP61-01116A | HOLDER-INTERFACE | L680,ABS,T2.5,BLACK | 1 | S.N.A |
| 15 |  | BP94-02230B | ASSY PCB S-DETECTOR-B/D | HLR5078(L8),EXCA | 1 | S.N.A |
| 16 | T0286 | BP31-00011A | FAN-DC | AD0612LB-D72GL,P.B.T UL94-Vo,Wire | 1 | S.A |
| 17 | T0027 | BP94-02230A | ASSY PCB S-DMD | HLR5078(L8),EXCALIBUR,L65 | 1 | S.N.A |
| 17-1 |  | BP61-01043A | BRACKET-COOLER | L680,AL D/C,T4.0 | 1 | S.N.A |
| 18 | T0134 | BP67-00218A | MIRROR-LIGHT TUNNEL | Excalibur,GLASS,5.7* | 1 | S.N.A |
| 19 |  | BP67-00219A | LENS-ILL-E1 | Excalibur,NBFD13,NTR,R1:INF, | 1 | S.N.A |
| 20 |  | BP67-00220A | LENS-ILL E2/E3 | Excalibur,FD60,BACED5,NTR | 1 | S.N.A |
| 21 |  | BP67-00221A | LENS-ILL E4 | Excalibur,BACED5,NTR,R1:57.6 | 1 | S.N.A |

# 5. Electrical Part List

## 5-1 HLR5078WX/XAA Service Item

Yon can search for the updated part code through ITSELF web site.
URL:http://itself.sec.samsung.co.kr

| Loc.No. | Code No. | Description | Specification | Q'ty | SA/SNA |
|---|---|---|---|---|---|
| CIS3 | BN40-00059A | TUNER | DNVD355BV401A,DNVD355BV401A,NTSC/Q | 1 | S.A |
| M0013 | BP96-00938C | ASSY COVER P-REAR BOTTOM | L6,HIPS V0,GR50 | 1 | S.A |
| M0018 | BP97-00954A | ASSY MICOM | L65A,29DL32,T_SCALER_0083,050 | 1 | S.A |
| M0114 | BP39-00205A | CBF SIGNAL | X-MEN,24/24P,UL20276,400mm,UL | 1 | S.A |
| T0003 | BP96-01058A | ASSY COVER P-FRONT | 50L8,ABS+PMMA,HB,BK23 | 1 | S.A |
| T0010 | BP96-00940A | ASSY HOLDER P-MIRROR LEFT | L6 ALL, L8,HIP | 1 | S.A |
| T0010 | BP96-00941A | ASSY HOLDER P-MIRROR RIGHT | L6 ALL, L8,HI | 1 | S.A |
| T0030 | BP96-01059A | ASSY COVER P-SIDE | 50L8,HIPS,HB,GR503,LEF | 1 | S.A |
| T0030 | BP96-01060A | ASSY COVER P-SIDE | 50L8,HIPS HB,GR503,RIG | 1 | S.A |
| T0049 | BP47-00021A | LAMP-BALLAST | EUC 120 P/H11,120W,130mm ca | 1 | S.A |
| T0053 | BP67-00140A | SCREEN FRESNEL | 50W,1126*646,1.5T | 1 | S.A |
| T0054 | BP67-00137A | SCREEN LENTI | 50W,1126*646,2.4T | 1 | S.A |
| T0074 | BP59-00071B | REMOCON | HURRICANE,TM76A,200*54*30,ZILOG | 1 | S.A |
| T0120 | BP94-02215B | ASSY PCB POWER | HLR5067,HURRICANE,L64B,11 | 1 | S.A |
| T0128 | BN39-00518B | CBF SIGNAL-STEREO | SVP-50L3HR,1P,UL2464#2 | 1 | S.A |
| T0129 | BP96-01198A | ASSY ENGINE P-DLP | 50L8,PHILIPS 120W,E22 | 1 | S.A |
| T0132 | BP94-02229A | ASSY PCB MISC-DIGITAL | HLR5078(L8),L65A,E | 1 | S.A |
| T0145 | BP94-02228A | ASSY PCB MISC-ANALOG | HLR5078(L),L65A,EXC | 1 | S.A |
| T0158 | BP96-00937C | ASSY COVER P-MAIN | L6 ALL,HIPS, V0,GR503 | 1 | S.A |
| T0260 | BP67-00096A | MIRROR | MIRROR FRONT 50",GLASS,1100X580X5 | 1 | S.A |
| T0952 | BP59-00087A | MODULE | UMX-NT-038,2IN/2OUT OOB,54~806§Ö, | 1 | S.A |

## 5-2 HLR5678WX/XAA Service Item

Yon can search for the updated part code through ITSELF web site.
URL:http://itself.sec.samsung.co.kr

| Loc.No. | Code No. | Description | Specification | Q'ty | SA/SNA |
|---|---|---|---|---|---|
| CIS3 | BN40-00059A | TUNER | DNVD355BV401A,DNVD355BV401A,NTSC/Q | 1 | S.A |
| M0013 | BP96-00938C | ASSY COVER P-REAR BOTTOM | L6,HIPS V0,GR50 | 1 | S.A |
| M0018 | BP97-00954A | ASSY MICOM | L65A,29DL32,T_SCALER_0083,050 | 1 | S.A |
| T0003 | BP96-01213A | ASSY COVER P-FRONT | 56L8,ABS+PMMA,HB,BK23 | 1 | S.A |
| T0010 | BP96-00940A | ASSY HOLDER P-MIRROR LEFT | L6 ALL, L8,HIP | 1 | S.A |
| T0010 | BP96-00941A | ASSY HOLDER P-MIRROR RIGHT | L6 ALL, L8,HI | 1 | S.A |
| T0030 | BP96-01219A | ASSY COVER P-SIDE | 56L8,HIPS HB,GR503,L | 1 | S.A |
| T0030 | BP96-01220A | ASSY COVER P-SIDE | 56L8,HIPS HB,GR503,RIG | 1 | S.A |
| T0049 | BP47-00021A | LAMP-BALLAST | EUC 120 P/H11,120W,130mm ca | 1 | S.A |
| T0053 | BP67-00184A | SCREEN FRESNEL | 56W,1270*728,T1.5 | 1 | S.A |
| T0054 | BP67-00183A | SCREEN LENTI | 56W,1270*728,T2.5 | 1 | S.A |
| T0074 | BP59-00071B | REMOCON | HURRICANE,TM76A,200*54*30,ZILOG | 1 | S.A |
| T0120 | BP94-02215B | ASSY PCB POWER | HLR5067,HURRICANE,L64B,11 | 1 | S.A |
| T0128 | BN39-00518B | CBF SIGNAL-STEREO | SVP-50L3HR,1P,UL2464#2 | 1 | S.A |
| T0129 | BP96-01198B | ASSY ENGINE P-DLP | 56L8,PHILIPS 120W,E22 | 1 | S.A |
| T0132 | BP94-02229A | ASSY PCB MISC-DIGITAL | HLR5078(L8),L65A,E | 1 | S.A |
| T0145 | BP94-02228A | ASSY PCB MISC-ANALOG | HLR5078(L),L65A,EXC | 1 | S.A |
| T0158 | BP96-00937C | ASSY COVER P-MAIN | L6 ALL,HIPS, V0,GR503 | 1 | S.A |
| T0260 | BP67-00097A | MIRROR | Front Mirror 56",GLASS,1279X650X6 | 1 | S.A |
| T0952 | BP59-00087A | MODULE | UMX-NT-038,2IN/2OUT OOB,54~806§Ö, | 1 | S.A |

## 5-3 HLR6178WX/XAA Service Item

Yon can search for the updated part code through ITSELF web site.
URL:http://itself.sec.samsung.co.kr

| Loc.No. | Code No. | Description | Specification | Q'ty | SA/SNA |
|---|---|---|---|---|---|
| CIS3 | BN40-00059A | TUNER | DNVD355BV401A,DNVD355BV401A,NTSC/Q | 1 | S.A |
| M0003 | BP96-00990A | ASSY COVER P-STAND | 61L6,HIPS,HB,GR503,SV | 1 | S.A |
| M0013 | BP96-00938C | ASSY COVER P-REAR BOTTOM | L6,HIPS V0,GR50 | 1 | S.A |
| M0018 | BP97-00954A | ASSY MICOM | L65A,29DL32,T_SCALER_0083,050 | 1 | S.A |
| M0114 | BP39-00205A | CBF SIGNAL | X-MEN,24/24P,UL20276,400mm,UL | 1 | S.A |
| M0256 | BP96-00849F | ASSY BRACKET P-MAIN PCB | L3,L6,L7,SECC,T1 | 1 | S.A |
| T0003 | BP96-01214A | ASSY COVER P-FRONT | 61L8,ABS+PMMA,HB,BK23 | 1 | S.A |
| T0010 | BP96-00940A | ASSY HOLDER P-MIRROR LEFT | L6 ALL, L8,HIP | 1 | S.A |
| T0010 | BP96-00941A | ASSY HOLDER P-MIRROR RIGHT | L6 ALL, L8,HI | 1 | S.A |
| T0030 | BP96-01221A | ASSY COVER P-SIDE | 61L8,HIPS HB,GR503,LEF | 1 | S.A |
| T0030 | BP96-01222A | ASSY COVER P-SIDE | 61L8,HIPS HB,GR503,RIG | 1 | S.A |
| T0049 | BP47-00021A | LAMP-BALLAST | EUC 120 P/H11,120W,130mm ca | 1 | S.A |
| T0053 | BP67-00165A | SCREEN FRESNEL | 61W,1381*790,1.5T | 1 | S.A |
| T0054 | BP67-00164A | SCREEN LENTI | 61W,1381*790,T2.5 | 1 | S.A |
| T0074 | BP59-00071B | REMOCON | HURRICANE,TM76A,200*54*30,ZILOG | 1 | S.A |
| T0120 | BP94-02215B | ASSY PCB POWER | HLR5067,HURRICANE,L64B,11 | 1 | S.A |
| T0128 | BN39-00518B | CBF SIGNAL-STEREO | SVP-50L3HR,1P,UL2464#2 | 1 | S.A |
| T0129 | BP96-01198C | ASSY ENGINE P-DLP | 61L8,PHILIPS 120W,E22 | 1 | S.A |
| T0132 | BP94-02229A | ASSY PCB MISC-DIGITAL | HLR5078(L8),L65A,E | 1 | S.A |
| T0145 | BP94-02228A | ASSY PCB MISC-ANALOG | HLR5078(L),L65A,EXC | 1 | S.A |
| T0158 | BP96-00937C | ASSY COVER P-MAIN | L6 ALL,HIPS, V0,GR503 | 1 | S.A |
| T0260 | BP67-00098A | MIRROR | FRONT MIRROR 61",GLASS,34.85MM,13 | 1 | S.A |
| T0952 | BP59-00087A | MODULE | UMX-NT-038,2IN/2OUT OOB,54~806§Ö, | 1 | S.A |

# MEMO

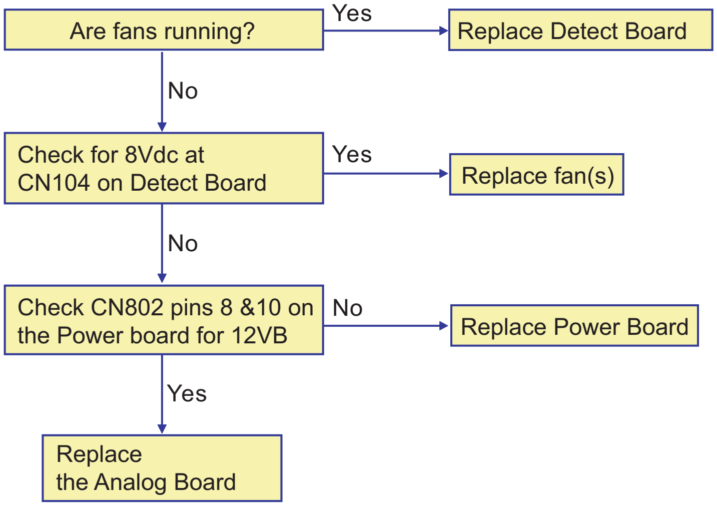
# 6. Troubleshooting

## 6-1 Checkpoints by Error Mode

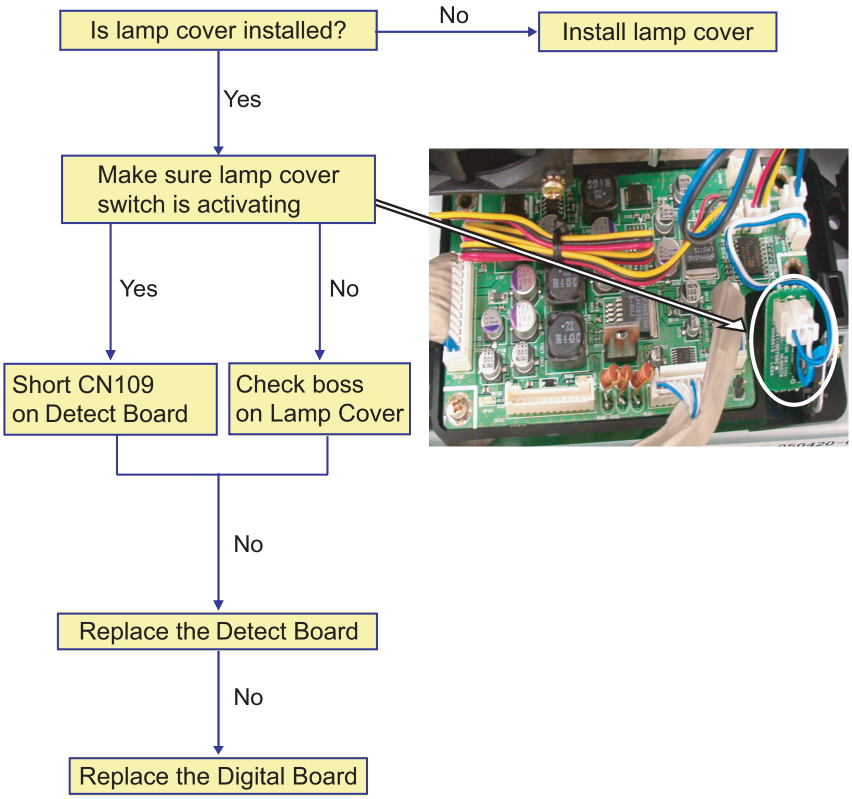
1. Power Light: Check the master switch (ON/OFF) and the fuse to see if they are operating.

2. LED Blinking: See the basic LED checklist in 6-2-1.

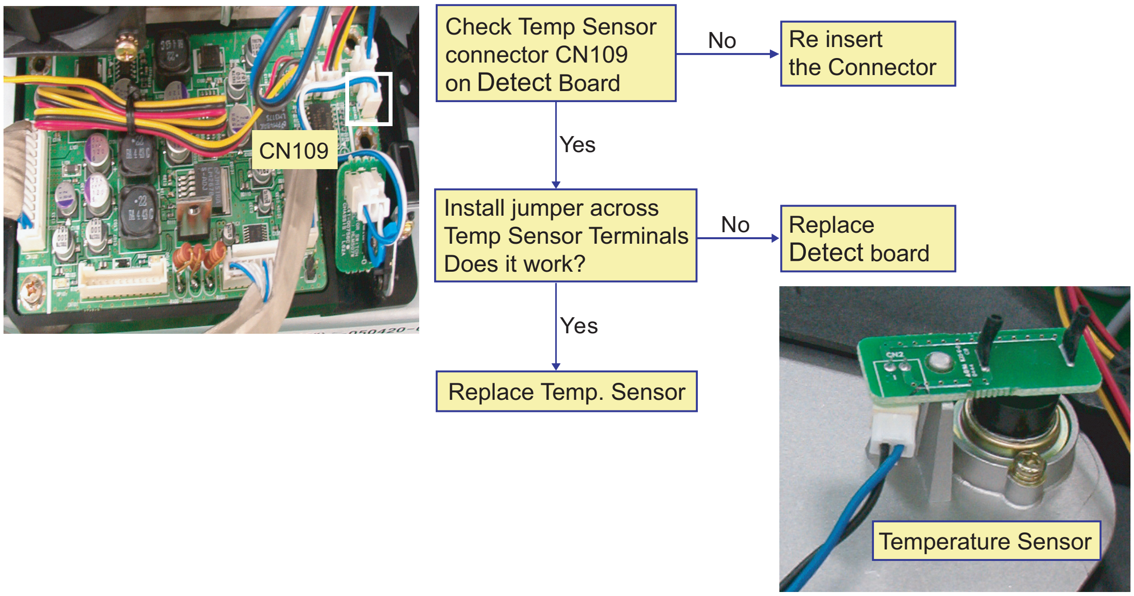
< Blinking Temp & Timer LED >


Are fans running?
Yes
Replace Detect Board
No
Check for 8Vdc at CN104 on Detect Board
Yes
Replace fan(s)
No
Check CN802 pins 8 &10 on the Power board for 12VB
No
Replace Power Board
Yes
Replace the Analog Board

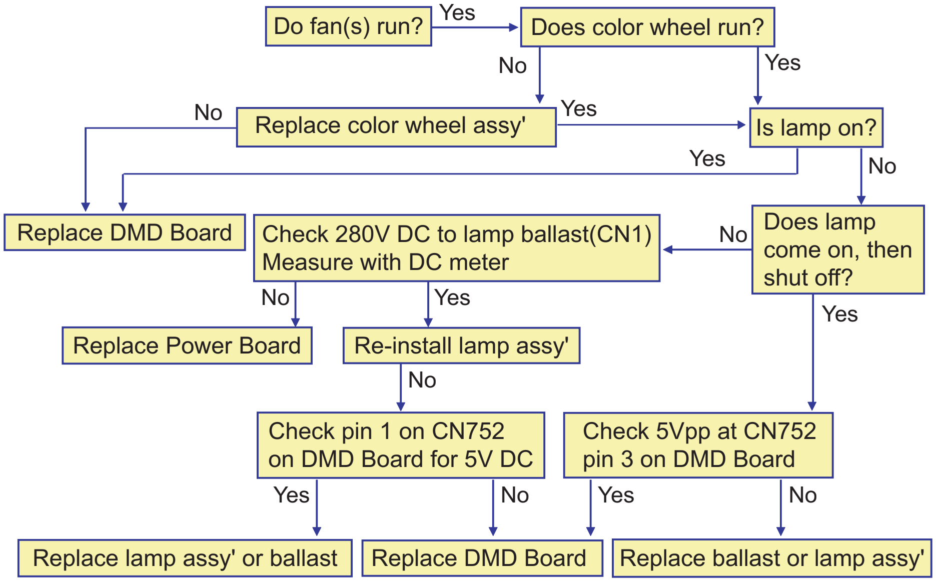
< Blinking Lamp and Temp LEDs >


Is lamp cover installed?
No
Install lamp cover
Yes
Make sure lamp cover switch is activating
Yes
No
Short CN109 on Detect Board
Check boss on Lamp Cover
No
Replace the Detect Board
No
Replace the Digital Board

## < Blinking Temp LED >


CN109
Check Temp Sensor connector CN109 on Detect Board
No
Re insert the Connector
Yes
Install jumper across Temp Sensor Terminals Does it work?
No
Replace Detect board
Yes
Replace Temp. Sensor
Temperature Sensor

A blinking lamp LED is the most common failure indication. It can be caused by no lamp, no color wheel, no fan(s), or other defective components.


Do fan(s) run?
Yes
Does color wheel run?
No
Yes
No
Replace color wheel assy'
Yes
Is lamp on?
Yes
No
Replace DMD Board
Check 280V DC to lamp ballast(CN1) Measure with DC meter
No
Does lamp come on, then shut off?
No
Yes
Yes
Replace Power Board
Re-install lamp assy'
No
Check pin 1 on CN752 on DMD Board for 5V DC
Check 5Vpp at CN752 pin 3 on DMD Board
Yes
No
Yes
No
Replace lamp assy' or ballast
Replace DMD Board
Replace ballast or lamp assy'

3. Noise:
Internal noise may be caused by a foreign substance on the fan or driving device.
For a DLP TV, the lamp fan, DMD board fan and color wheel are vulnerable to noise. Sometimes the connector wire around the lamp or DMD fan makes contact with the fan, while the color wheel is protected inside the module and cannot make contact with any nearby wires. However the color wheel sensor or the drive motor may cause noise by making contact with the color wheel.
As the color wheel uses an air bearing system, it has a very slight possibility of creating internal noise.
When irregular noise occurs for no particular reason, check the inside of the TV for any foreign substances.
The DLP projection TV may cause noise as the physical screen is empty inside, causing a resonance to a particular frequency.
Thus a low vibration is not a malfunction.
Any 'creaking' noise is mostly from the structure of the device itself. A short, harsh noise may occur from a distortion or malformation due to thermal expansion between the metal joints, screws and loaded parts, respectively. Any intermittent 'creaking' noise can be removed by loosening the screws.

4. A black screen with the lamp on: Replace the DMD board.

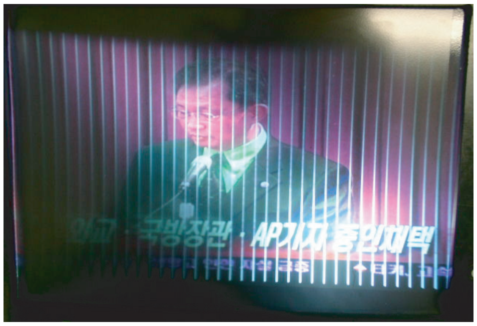
5. Line Pattern: Regular line patterns occur vertically or horizontally: Replace the DMD board.

6. Voice Distortion: Replace the analog board.

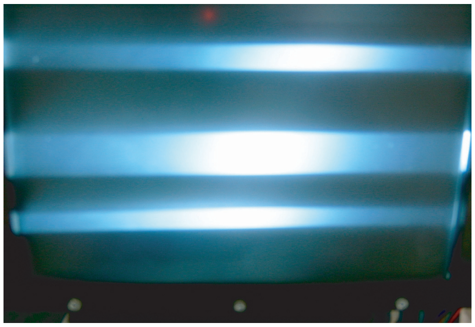
7. Outside Light: This is not a product malfunction, but a possible installation or human error. This occurs when the projected light from the surrounding illumination reflects onto the screen. This disappears as the TV starts operating and the TV lamp gets brighter. However, you can avoid outside light by changing the position of the TV or the installation angle.
Decreasing the illumination or changing the indoor lighting may work.

8. Screen Flip-over:
Enter Factory mode in DDP1011 and perform H-Flip (flip horizontally) and V-Flip (flip vertically).
The screen will flip over horizontally or vertically.

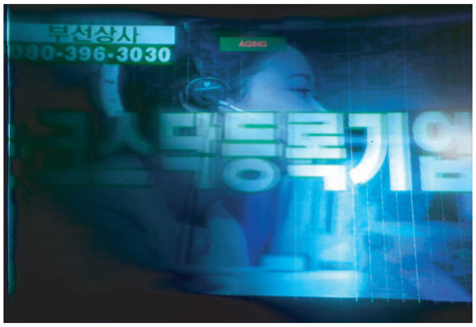
## 9. Other Screen Errors:



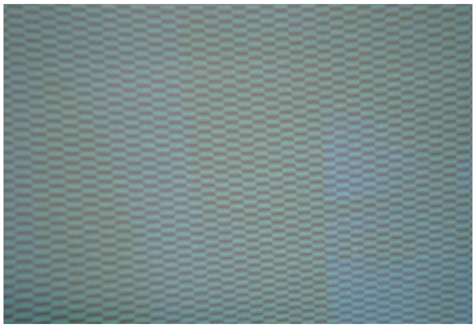
- ▶ 40 Vertical lines 16 pixels wide:
  DDP1011 or BGA, DMD panel interference.
  → Replace the DMD board



- ▶ Horizontal Bar or No Raster:
  Error in DDP1011 or the DMP panel.
  → Replace the DMD board



- ▶ Dotted Vertical Bar:
  Error in Rambus Dram(IC 403) or the soldering
  → Replace the DMD board



- ▶ Beehive mosaic patterns all over the screen:
  Error in the LVDS Receiver (IC 601) or the soldering
  The H sync signals are not transferred to DDP1011.
  → Replace the DMD board.

## 6-1-1 Video Circuit Error Checking

■ Basics:
- The DDP1011 on the DMD board has a feature to display internal test patterns.
- DNIe, which is an end port in the digital board, has a feature to display internal test patterns.
- The analog board sends signals to ADV7401 on the digital board.
- The analog board is the first output and the digital board is the second one, followed by DMD, which is the final one.

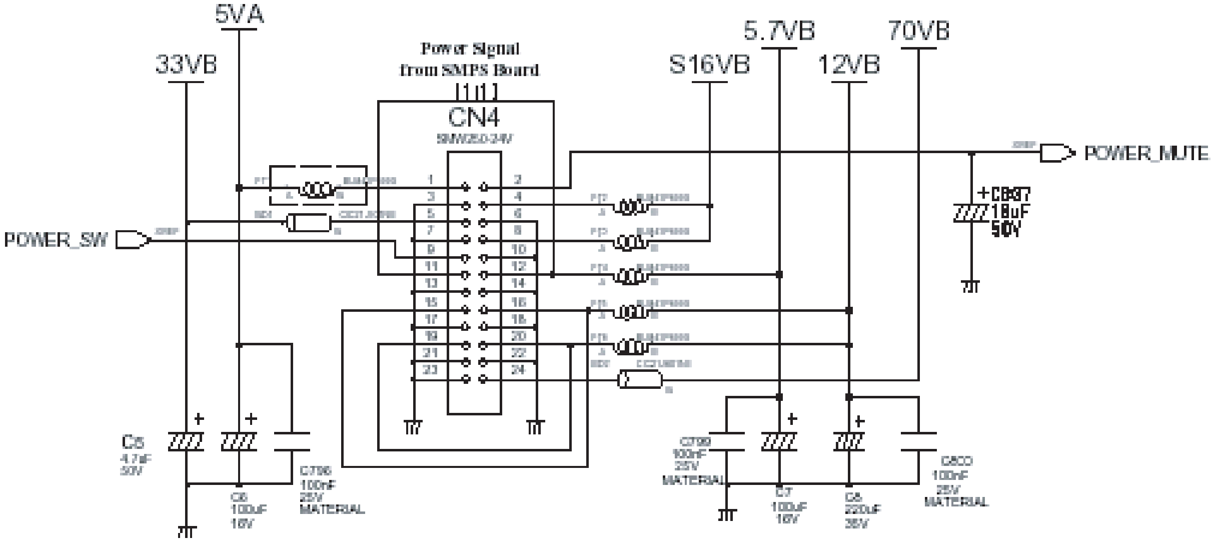
■ Diagnosis By Module

1. Access Service Mode
   (In Standby mode, press "Mute", "1", "8", "2" and "Power" to turn the screen on and enter service mode)

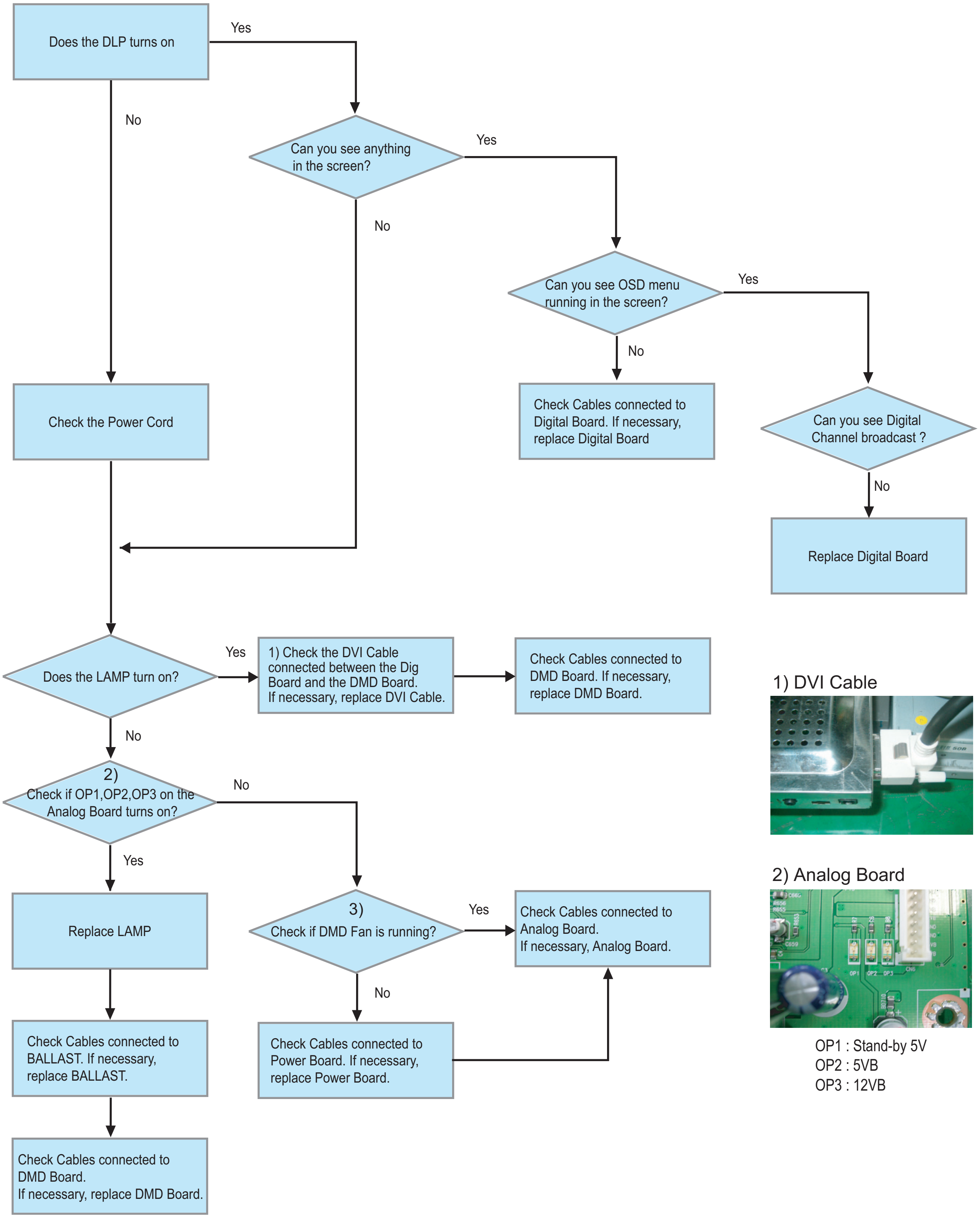
2. Check if there is an error in the DMD board
   DDP1011 → TEST PATTERN → Press the right arrow key:
   Options of FULL WHITE, BLACK, RED, GREEN and BLUE PATTERN are displayed on the screen.
   If "Pattern" does not appear, this is a DMD board error.

3. Check if there is an error in the digital board before the DMD.
   When the DMD board has been determined to be error free based on the test patterns:
   FACTORY MODE → DNIe → TEST PATTERN normal display: no error in the digital board.
   If "Pattern" does not appear, you have to check a Analog board first, and check a DMD Board second, next check a Digital Board.

4. Check if there is an error in the Analog Board.
   Check for a power signal from the analog to the digital boards. (See the circuit diagram below).


5VA
33VB
Power Signal
from SMPS Board
[1 [1]
CN4
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
POWER_SW
5.7VB
70VB
S16VB
12VB
POWER_MUTE
+CB37
10uF
50V
C5
4.7uF
50V
C6
100uF
16V
C796
100nF
25V
MATERIAL
C799
100nF
25V
MATERIAL
C7
100uF
16V
C8
220uF
35V
C800
100nF
25V
MATERIAL

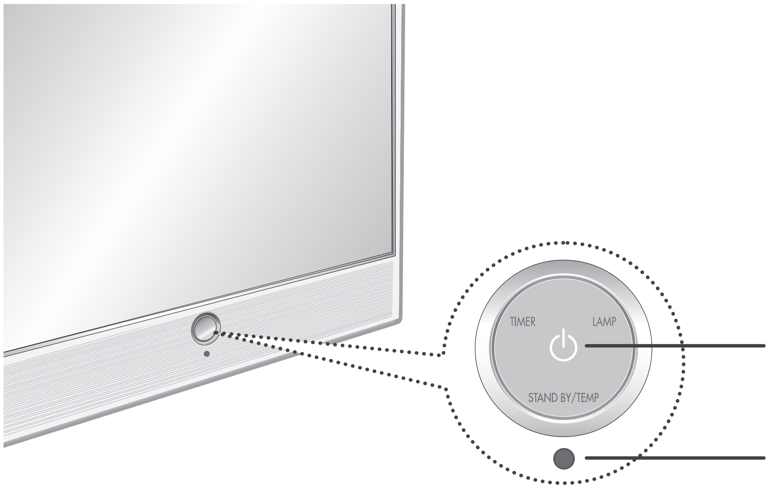
## 6-1-2 Flow Chart for Malfunction


Does the DLP turns on
Yes
No
Can you see anything in the screen?
Yes
No
Can you see OSD menu running in the screen?
Yes
No
Check Cables connected to Digital Board. If necessary, replace Digital Board
Can you see Digital Channel broadcast ?
No
Replace Digital Board
Check the Power Cord
Does the LAMP turn on?
Yes
1) Check the DVI Cable connected between the Dig Board and the DMD Board. If necessary, replace DVI Cable.
Check Cables connected to DMD Board. If necessary, replace DMD Board.
No
2) Check if OP1,OP2,OP3 on the Analog Board turns on?
No
Yes
Replace LAMP
3) Check if DMD Fan is running?
Yes
Check Cables connected to Analog Board. If necessary, Analog Board.
No
Check Cables connected to BALLAST. If necessary, replace BALLAST.
Check Cables connected to Power Board. If necessary, replace Power Board.
Check Cables connected to DMD Board. If necessary, replace DMD Board.
1) DVI Cable
2) Analog Board
OP1
OP2
OP3

OP1 : Stand-by 5V
OP2 : 5VB
OP3 : 12VB

# 6-2 Troubleshooting Procedures by Error Modes

## 6-2-1 Installation & Connection



**POWER**
Press to turn the TV on and off.

**Remote Control Sensor**
Aim the remote control towards this spot on the TV.

● : Light is On
◑ : Light is Blinking
○ : Light is Off

| TIMER | LAMP | STAND BY/TEMP | Indication |
|---|---|---|---|
| ○ | ○ | ● | Standby state. |
| ○ | ◑ | ○ | The picture will automatically appear in about 15 seconds. |
| ● | ◑ | ○ | Auto Timer ON/OFF has been set and the set will automatically be turned on in about 25 seconds. |
| ◑ | ○ | ◑ | A cooling fan inside the set is not operating normally. |
| ○ | ◑ | ◑ | Lamp cover on rear of the set is not properly shut. |
| ○ | ○ | ◑ | Check if the ventilation hole on the rear of the set is blocked, because if the inner temperature is too high, the power will shut off. |
| ◑ | ◑ | ◑ | Lamp may be defective. |

* It takes about 30 seconds for the TV to warm up, so normal brightness may not appear immediately.
* The TV has a fan to keep the inside lamp from overheating. You'll occasionally hear it working.

## 6-2-2 Protect Status

1. When the rear cover is opened
A sensor detects when the rear cover is opened and turns the set off and then into Standby mode.
If you close the cover or fix the switch, you can turn the set on by pressing the Power button on the unit or the remote control. The set will then operate normally.

2. When the temperature sensor operates
When the set is overheated, the internal temperature sensor turns the set off and the set goes to Standby mode.
When the internal temperature of the set returns to a normal range(95℃), turn the power on by pressing the Power button on the unit or the remote control. The set will then operate normally.

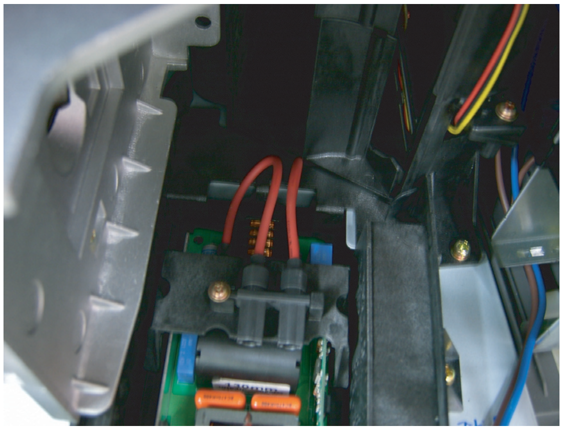
3. Attempting to turn the lamp on fails repeatedly
If turning the lamp on fails, the set automatically tries turning the lamp on 3 times. If all attempts fail, all LED's on the front panel will blink. Check the lamp and the ballast and replace them, if necessary.

# 6-3 Troubleshooting Procedures by ASS'Y

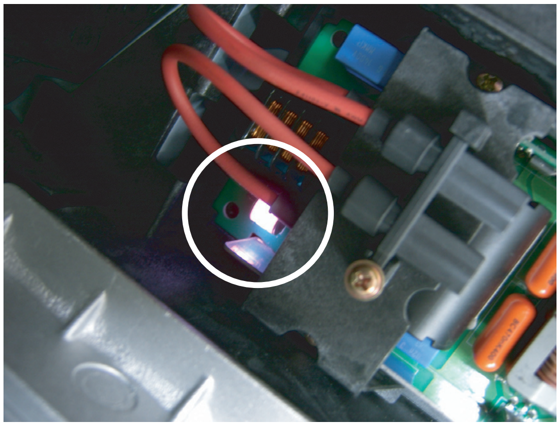
## 6-3-1 Check Lamp & Ballast

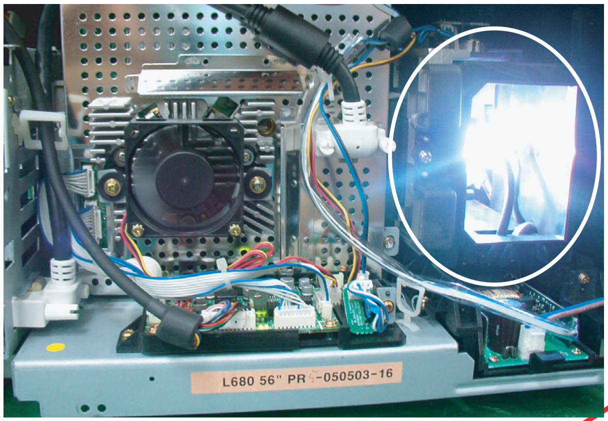
1. When the lamp is not on, check if there is anything wrong with the ballast.

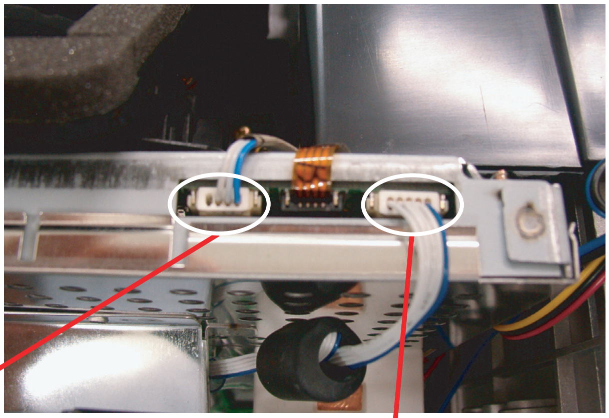
   Remove the lamp. Fix the safety switch on the right with tape and turn on the power.
   Check to see if a blue flame starts igniting in the arc gap inside the ballast momentarily during start-up.
   There is no problem with the ballast if there is a flame. When the ballast has no error, replace the lamp.



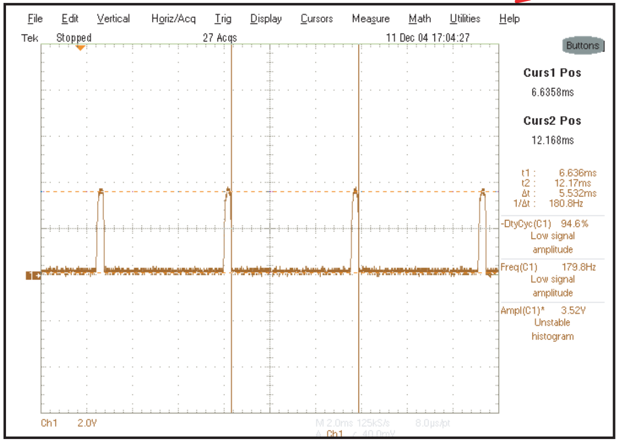
A blue flame occurs momentarily during start-up.




L680 56" PR-050503-16

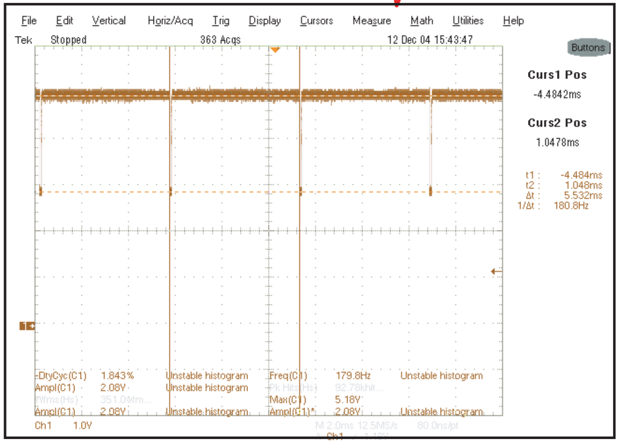


3.5V 180Hz


File
Edit
Vertical
Horiz/Acq
Trig
Display
Cursors
Measure
Math
Utilities
Help
Buttons

```
Tek   Stopped          27 Acqs          11 Dec 04 17:04:27
Curs1 Pos
6.6358ms
Curs2 Pos
12.168ms
t1 :     6.636ms
t2 :     12.17ms
Δt :     5.532ms
1/Δt :   180.8Hz
-DtyCyc(C1)  94.6%
Low signal
amplitude
Freq(C1)     179.8Hz
Low signal
amplitude
Ampl(C1)*    3.52V
Unstable
histogram
Ch1   2.0V        M 2.0ms 125kS/s      8.0μs/pt
                  A  Ch1  ∫  40.0mV
```

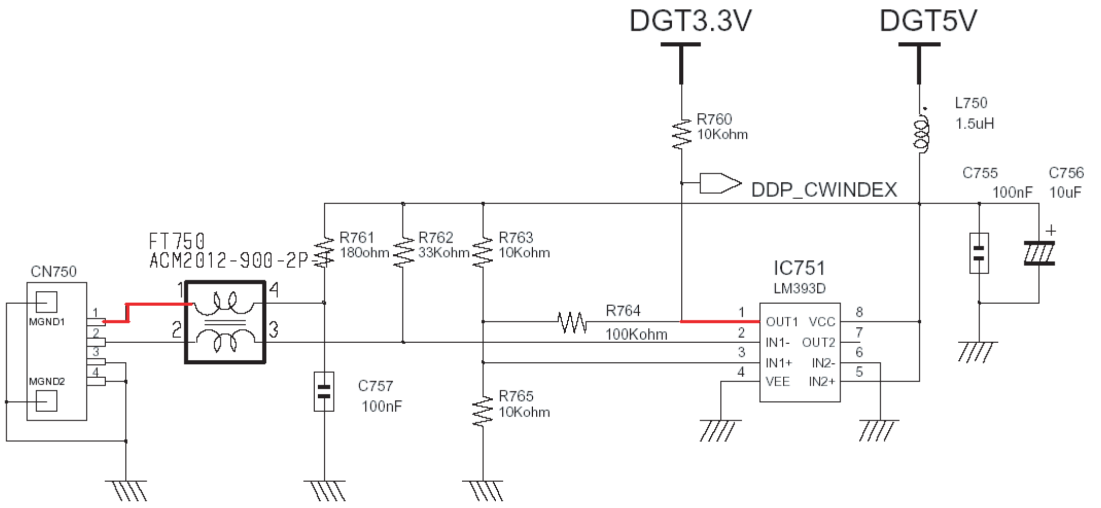
5V 180Hz


File
Edit
Vertical
Horiz/Acq
Trig
Display
Cursors
Measure
Math
Utilities
Help
Buttons

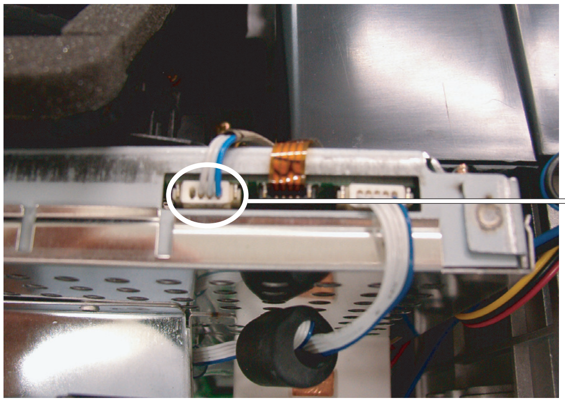
```
Tek   Stopped          363 Acqs          12 Dec 04 15:43:47
Curs1 Pos
-4.4842ms
Curs2 Pos
1.0478ms
t1 :     -4.484ms
t2 :     1.048ms
Δt :     5.532ms
1/Δt :   180.8Hz
-DtyCyc(C1)  1.843%    Unstable histogram   Freq(C1)     179.8Hz    Unstable histogram
Ampl(C1)     2.08V     Unstable histogram   Pk Hits(Hs)  92.78khit...
Wfms(Hs)     351.0wfm...                    Max(C1)      5.18V
Ampl(C1)     2.08V     Unstable histogram   Ampl(C1)*    2.08V      Unstable histogram
Ch1   1.0V        M 2.0ms 12.5MS/s     80.0ns/pt
                  A  Ch1  ∫  1.18V
```

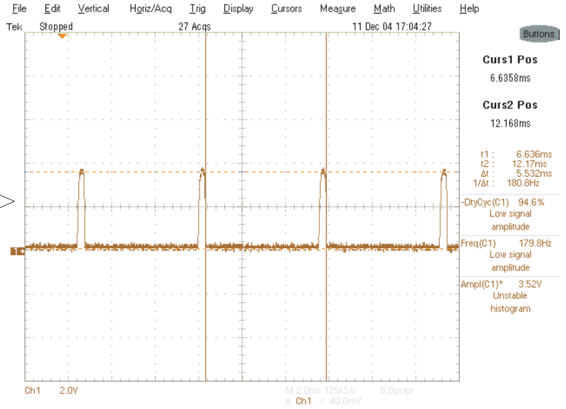
## 6-3-2 When the lamp and the ballast are normal but the lamp does not turn on or turns off right after quickly lighting up

1. Check the color wheel
   Check if the color wheel is running. + Check the DMD board and the ballast for the signals.
   Check the second CN503 pin for input signals. When 3.5V, 180Hz is output, the color wheel is operating normally.


DGT3.3V
DGT5V
R760
10Kohm
L750
1.5uH
DDP_CWINDEX
C755
100nF
C756
10uF
FT750
ACM2012-900-2P
R761
180ohm
R762
33Kohm
R763
10Kohm
IC751
LM393D
CN750
MGND1
MGND2
1
2
3
4
R764
100Kohm
OUT1
VCC
IN1-
OUT2
IN1+
IN2-
VEE
IN2+
8
7
6
5
C757
100nF
R765
10Kohm

3.5V 180Hz




File
Edit
Vertical
Horiz/Acq
Trig
Display
Cursors
Measure
Math
Utilities
Help
Tek
Stopped
27 Acqs
11 Dec 04 17:04:27
Buttons
Ch1
2.0V
M 2.0ms 125kS/s
8.0µs/pt
A Ch1 ⟋ 40.0mV

Curs1 Pos
6.6358ms

Curs2 Pos
12.168ms

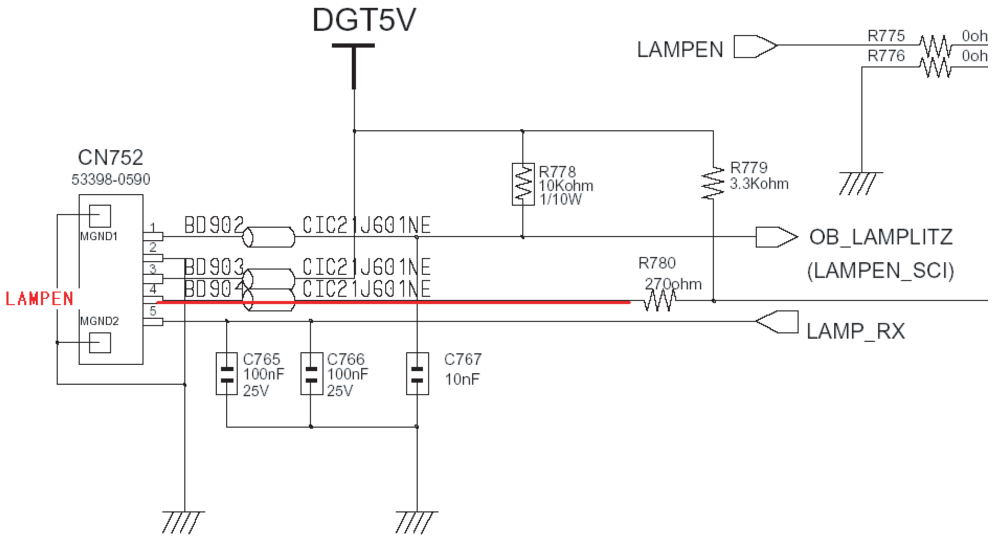
t1 : 6.636ms
t2 : 12.17ms
Δt : 5.532ms
1/Δt : 180.8Hz

-DtyCyc(C1) 94.6%
Low signal amplitude

Freq(C1) 179.8Hz
Low signal amplitude

Ampl(C1)* 3.52V
Unstable histogram

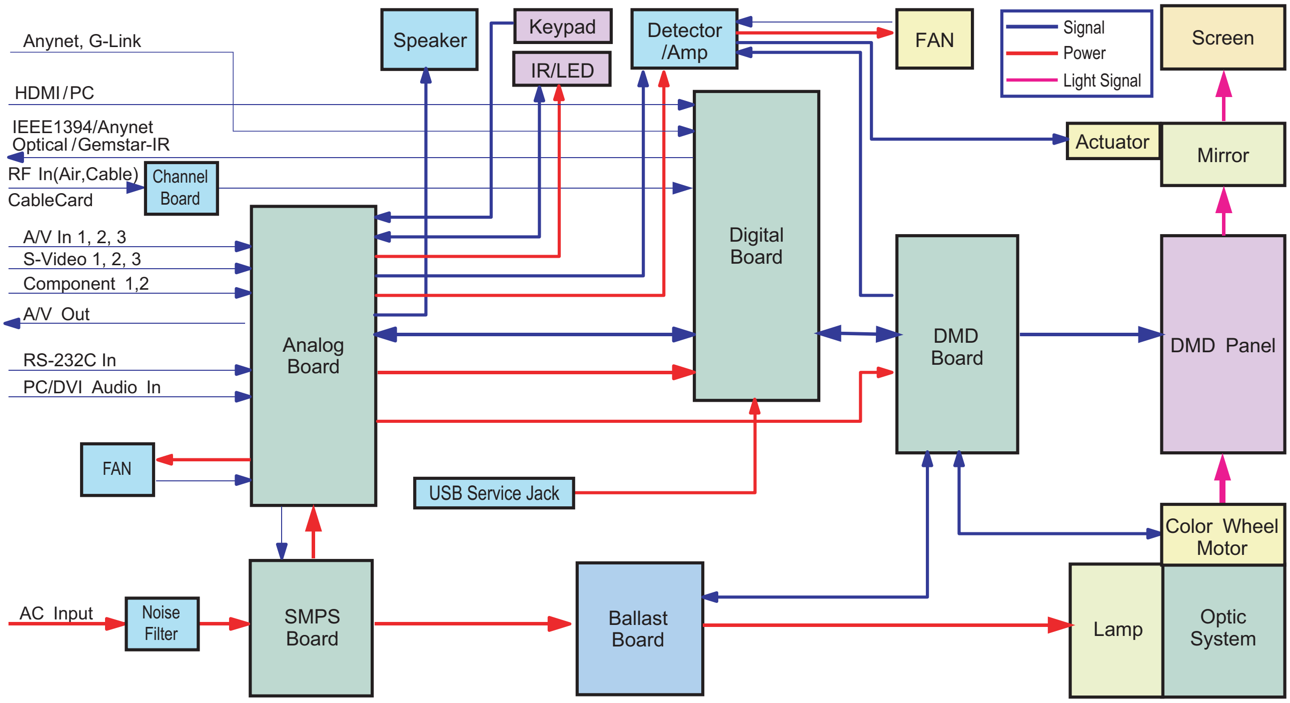
※ DMD Board Check Diagram


DGT5V
LAMPEN
R775
R776
0oh
0oh
CN752
53398-0590
R778
10Kohm
1/10W
R779
3.3Kohm
MGND1
MGND2
1
2
3
4
5
BD902
BD903
BD904
CIC21J601NE
CIC21J601NE
CIC21J601NE
OB_LAMPLITZ
(LAMPEN_SCI)
LAMPEN
R780
270ohm
LAMP_RX
C765
100nF
25V
C766
100nF
25V
C767
10nF

# MEMO

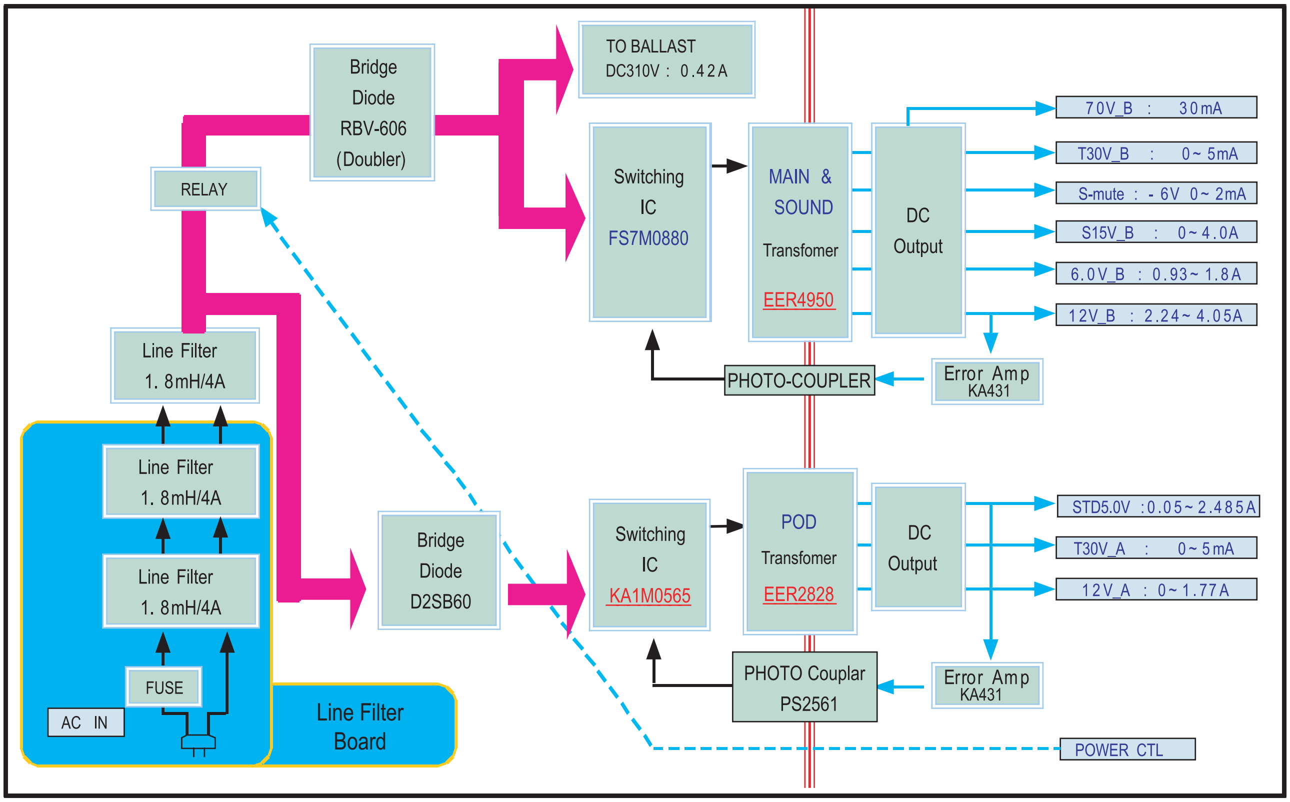
# 7. Block Diagram

## 7-1 Overall Block Diagram

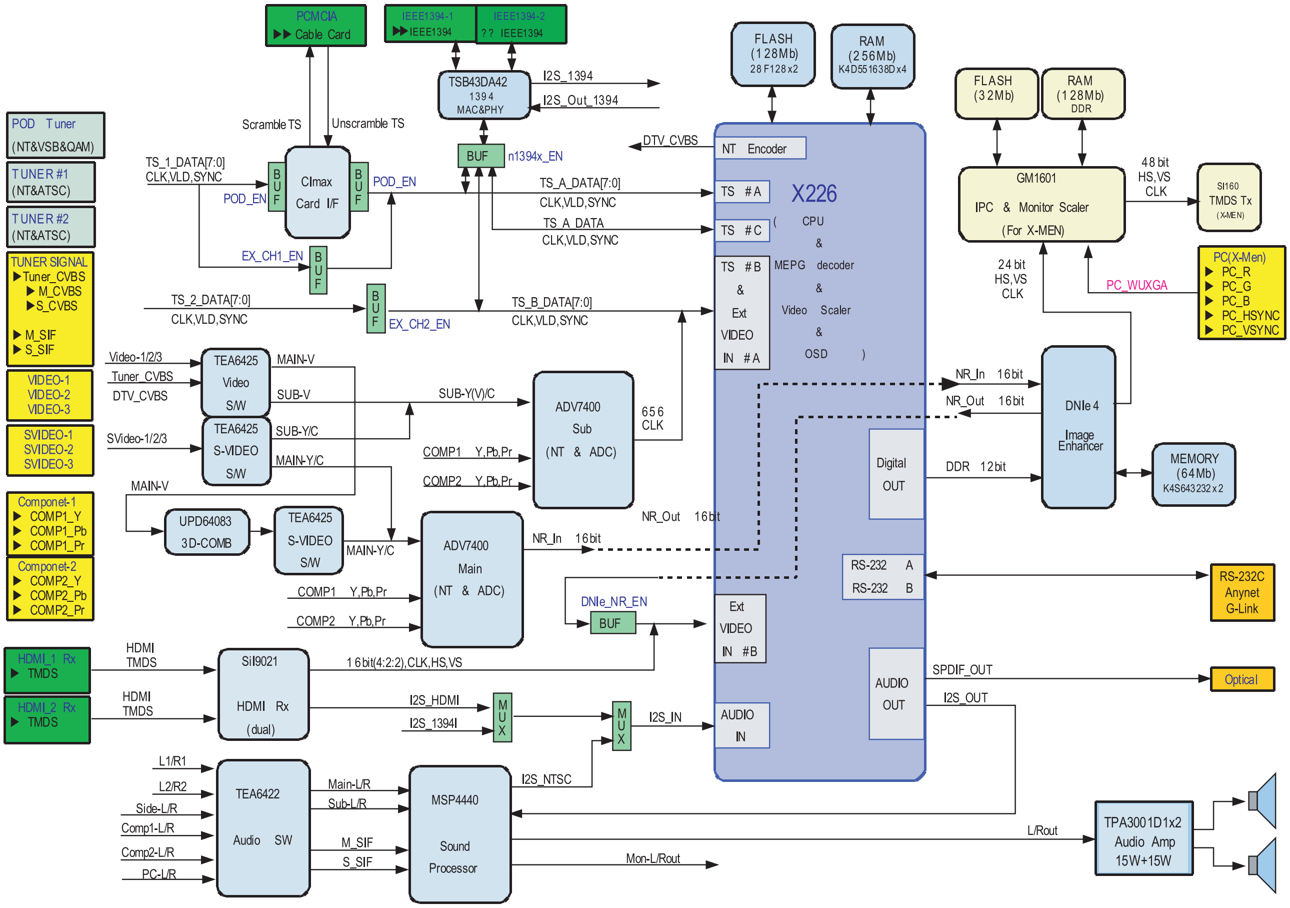

Anynet, G-Link
HDMI/PC
IEEE1394/Anynet
Optical/Gemstar-IR
RF In(Air,Cable)
CableCard
Channel Board
A/V In 1, 2, 3
S-Video 1, 2, 3
Component 1,2
A/V Out
RS-232C In
PC/DVI Audio In
FAN
Analog Board
Speaker
Keypad
IR/LED
Detector /Amp
FAN
Signal
Power
Light Signal
Screen
Actuator
Mirror
Digital Board
DMD Board
DMD Panel
USB Service Jack
Color Wheel Motor
AC Input
Noise Filter
SMPS Board
Ballast Board
Lamp
Optic System

# 7-2 Partial Block Diagram

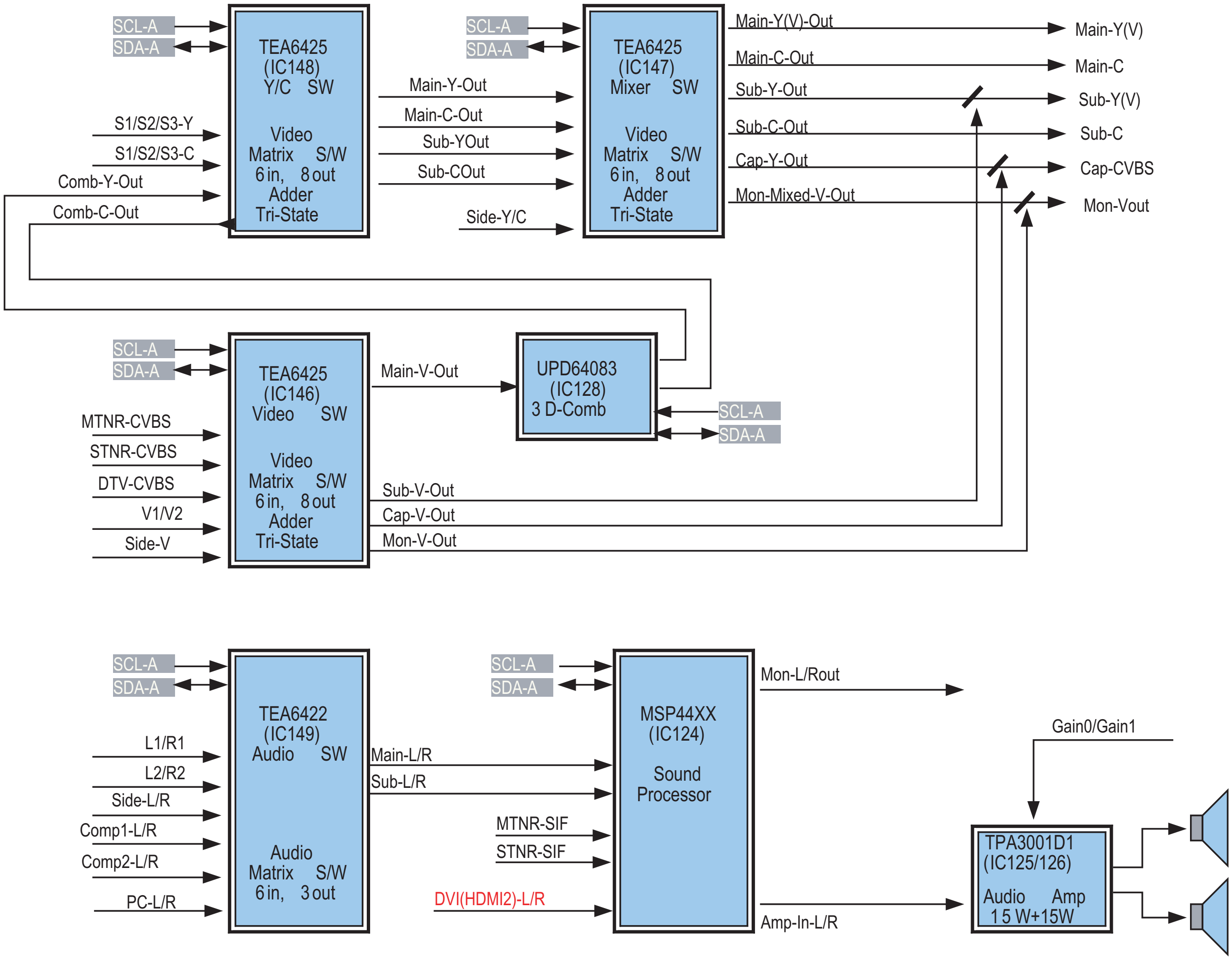
## 7-2-1 Power Board Block Diagram


Bridge
Diode
RBV-606
(Doubler)
TO BALLAST
DC310V : 0.42A
RELAY
Switching
IC
FS7M0880
MAIN & SOUND
Transfomer
EER4950
DC
Output
70V_B : 30mA
T30V_B : 0~5mA
S-mute : -6V 0~2mA
S15V_B : 0~4.0A
6.0V_B : 0.93~1.8A
12V_B : 2.24~4.05A
Line Filter
1.8mH/4A
PHOTO-COUPLER
Error Amp
KA431
Line Filter
1.8mH/4A
Line Filter
1.8mH/4A
Bridge
Diode
D2SB60
Switching
IC
KA1M0565
POD
Transfomer
EER2828
DC
Output
STD5.0V :0.05~2.485A
T30V_A : 0~5mA
12V_A : 0~1.77A
FUSE
AC IN
Line Filter
Board
PHOTO Coupler
PS2561
Error Amp
KA431
POWER CTL

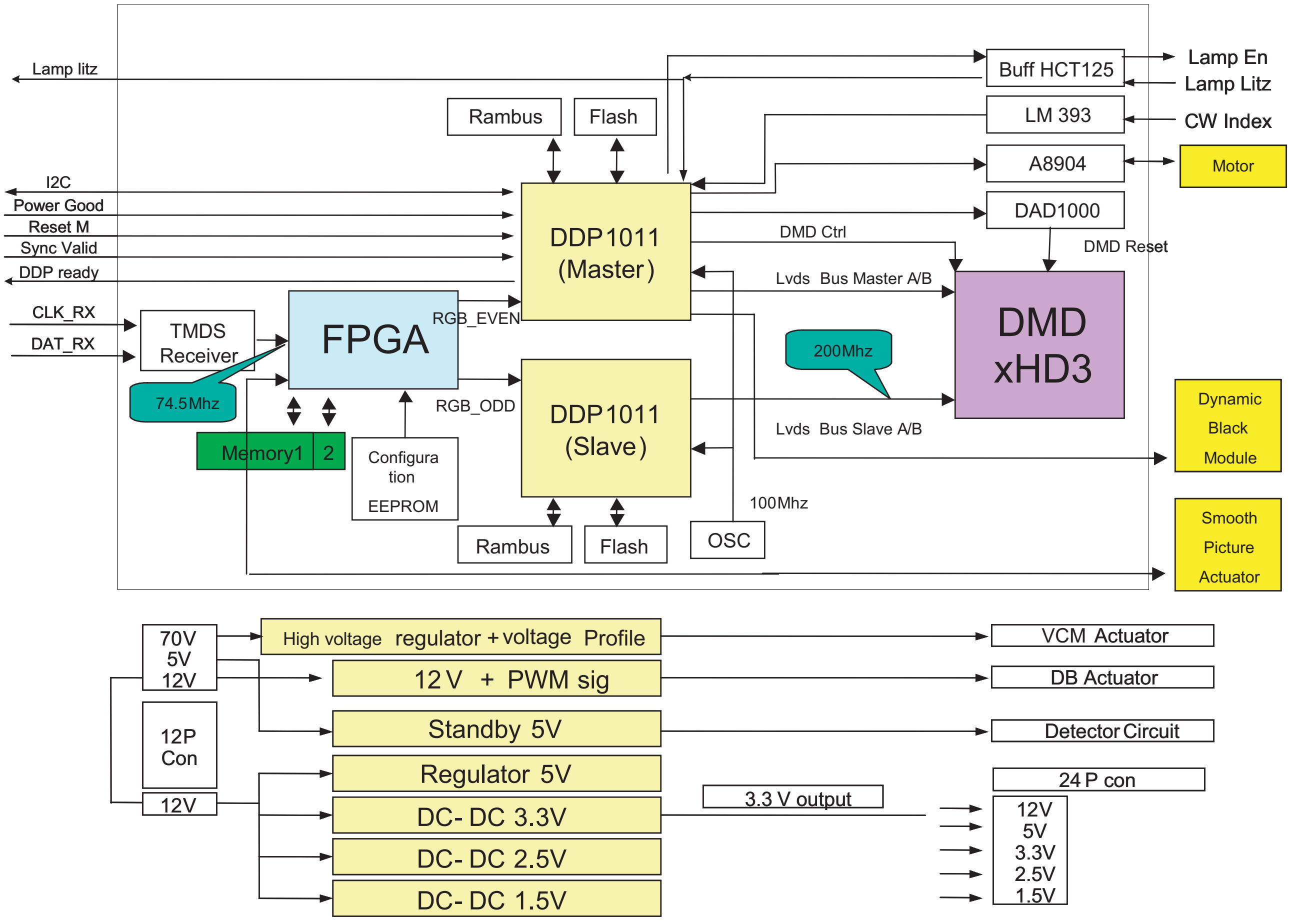
### 7-2-2 Digital Board Block Diagram


PCMCIA
Cable Card
IEEE1394-1
IEEE1394
IEEE1394-2
IEEE1394
TSB43DA42
1394
MAC&PHY
I2S_1394
I2S_Out_1394
BUF
n1394x_EN
FLASH
(128Mb)
28F128x2
RAM
(256Mb)
K4D551638Dx4
FLASH
(32Mb)
RAM
(128Mb)
DDR
POD Tuner
(NT&VSB&QAM)
TUNER #1
(NT&ATSC)
TUNER #2
(NT&ATSC)
TUNER SIGNAL
Tuner_CVBS
M_CVBS
S_CVBS
M_SIF
S_SIF
Scramble TS
Unscramble TS
TS_1_DATA[7:0]
CLK,VLD,SYNC
POD_EN
CImax
Card I/F
BUF
POD_EN
EX_CH1_EN
TS_A_DATA[7:0]
CLK,VLD,SYNC
TS_A_DATA
CLK,VLD,SYNC
TS_2_DATA[7:0]
CLK,VLD,SYNC
EX_CH2_EN
TS_B_DATA[7:0]
CLK,VLD,SYNC
DTV_CVBS
NT Encoder
TS #A
TS #C
TS #B & Ext VIDEO IN #A
X226
(CPU & MEPG decoder & Video Scaler & OSD)
GM1601
IPC & Monitor Scaler
(For X-MEN)
48bit
HS,VS
CLK
SI160
TMDS Tx
(X-MEN)
24bit
HS,VS
CLK
PC_WUXGA
PC(X-Men)
PC_R
PC_G
PC_B
PC_HSYNC
PC_VSYNC
VIDEO-1
VIDEO-2
VIDEO-3
Video-1/2/3
Tuner_CVBS
DTV_CVBS
TEA6425
Video
S/W
MAIN-V
SUB-V
SUB-Y(V)/C
ADV7400
Sub
(NT & ADC)
656
CLK
NR_In 16bit
NR_Out 16bit
DNIe4
Image
Enhancer
SVIDEO-1
SVIDEO-2
SVIDEO-3
SVideo-1/2/3
TEA6425
S-VIDEO
S/W
SUB-Y/C
MAIN-Y/C
COMP1 Y,Pb,Pr
COMP2 Y,Pb,Pr
Digital
OUT
DDR 12bit
MEMORY
(64Mb)
K4S643232x2
MAIN-V
Componet-1
COMP1_Y
COMP1_Pb
COMP1_Pr
UPD64083
3D-COMB
TEA6425
S-VIDEO
S/W
MAIN-Y/C
ADV7400
Main
(NT & ADC)
NR_Out 16bit
NR_In 16bit
Componet-2
COMP2_Y
COMP2_Pb
COMP2_Pr
COMP1 Y,Pb,Pr
COMP2 Y,Pb,Pr
RS-232 A
RS-232 B
RS-232C
Anynet
G-Link
DNIe_NR_EN
BUF
Ext
VIDEO
IN #B
HDMI_1 Rx
TMDS
HDMI
TMDS
SiI9021
HDMI Rx
(dual)
16bit(4:2:2),CLK,HS,VS
HDMI_2 Rx
TMDS
HDMI
TMDS
I2S_HDMI
I2S_1394I
MUX
MUX
I2S_IN
AUDIO
OUT
SPDIF_OUT
Optical
I2S_OUT
AUDIO
IN
L1/R1
L2/R2
Side-L/R
Comp1-L/R
Comp2-L/R
PC-L/R
TEA6422
Audio SW
Main-L/R
Sub-L/R
M_SIF
S_SIF
MSP4440
Sound
Processor
I2S_NTSC
L/Rout
Mon-L/Rout
TPA3001D1x2
Audio Amp
15W+15W

## 7-2-3 Analog Board Block Diagram


SCL-A
SDA-A
TEA6425
(IC148)
Y/C SW
Video
Matrix S/W
6 in, 8 out
Adder
Tri-State
S1/S2/S3-Y
S1/S2/S3-C
Comb-Y-Out
Comb-C-Out
Main-Y-Out
Main-C-Out
Sub-YOut
Sub-COut
Side-Y/C
SCL-A
SDA-A
TEA6425
(IC147)
Mixer SW
Video
Matrix S/W
6 in, 8 out
Adder
Tri-State
Main-Y(V)-Out
Main-C-Out
Sub-Y-Out
Sub-C-Out
Cap-Y-Out
Mon-Mixed-V-Out
Main-Y(V)
Main-C
Sub-Y(V)
Sub-C
Cap-CVBS
Mon-Vout
SCL-A
SDA-A
TEA6425
(IC146)
Video SW
Video
Matrix S/W
6 in, 8 out
Adder
Tri-State
MTNR-CVBS
STNR-CVBS
DTV-CVBS
V1/V2
Side-V
Main-V-Out
UPD64083
(IC128)
3 D-Comb
SCL-A
SDA-A
Sub-V-Out
Cap-V-Out
Mon-V-Out
SCL-A
SDA-A
TEA6422
(IC149)
Audio SW
Audio
Matrix S/W
6 in, 3 out
L1/R1
L2/R2
Side-L/R
Comp1-L/R
Comp2-L/R
PC-L/R
Main-L/R
Sub-L/R
SCL-A
SDA-A
MTNR-SIF
STNR-SIF
DVI(HDMI2)-L/R
MSP44XX
(IC124)
Sound
Processor
Mon-L/Rout
Amp-In-L/R
Gain0/Gain1
TPA3001D1
(IC125/126)
Audio Amp
15 W+15W

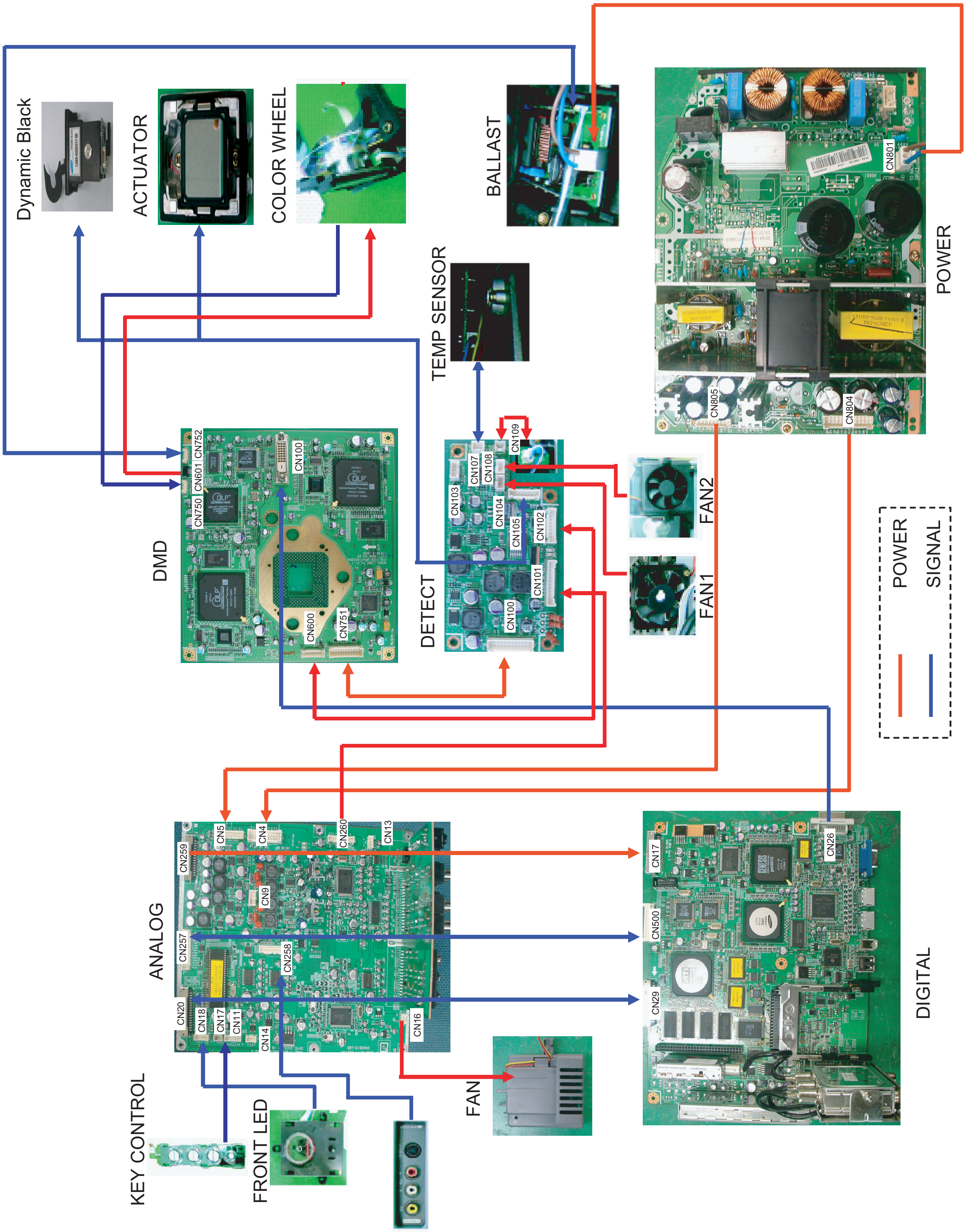
## 7-2-4 DMD Board Block Diagram


Lamp litz
Buff HCT125
Lamp En
Lamp Litz
LM 393
CW Index
Rambus
Flash
A8904
Motor
I2C
Power Good
Reset M
Sync Valid
DDP ready
DDP1011
(Master)
DAD1000
DMD Ctrl
DMD Reset
Lvds Bus Master A/B
CLK_RX
DAT_RX
TMDS
Receiver
FPGA
RGB_EVEN
74.5Mhz
200Mhz
DMD
xHD3
Memory1
2
Configura
tion
EEPROM
RGB_ODD
DDP1011
(Slave)
Lvds Bus Slave A/B
Dynamic
Black
Module
100Mhz
Rambus
Flash
OSC
Smooth
Picture
Actuator
70V
5V
12V
High voltage regulator + voltage Profile
VCM Actuator
12 V + PWM sig
DB Actuator
12P
Con
Standby 5V
Detector Circuit
Regulator 5V
24 P con
12V
3.3 V output
DC- DC 3.3V
DC- DC 2.5V
DC- DC 1.5V
12V
5V
3.3V
2.5V
1.5V

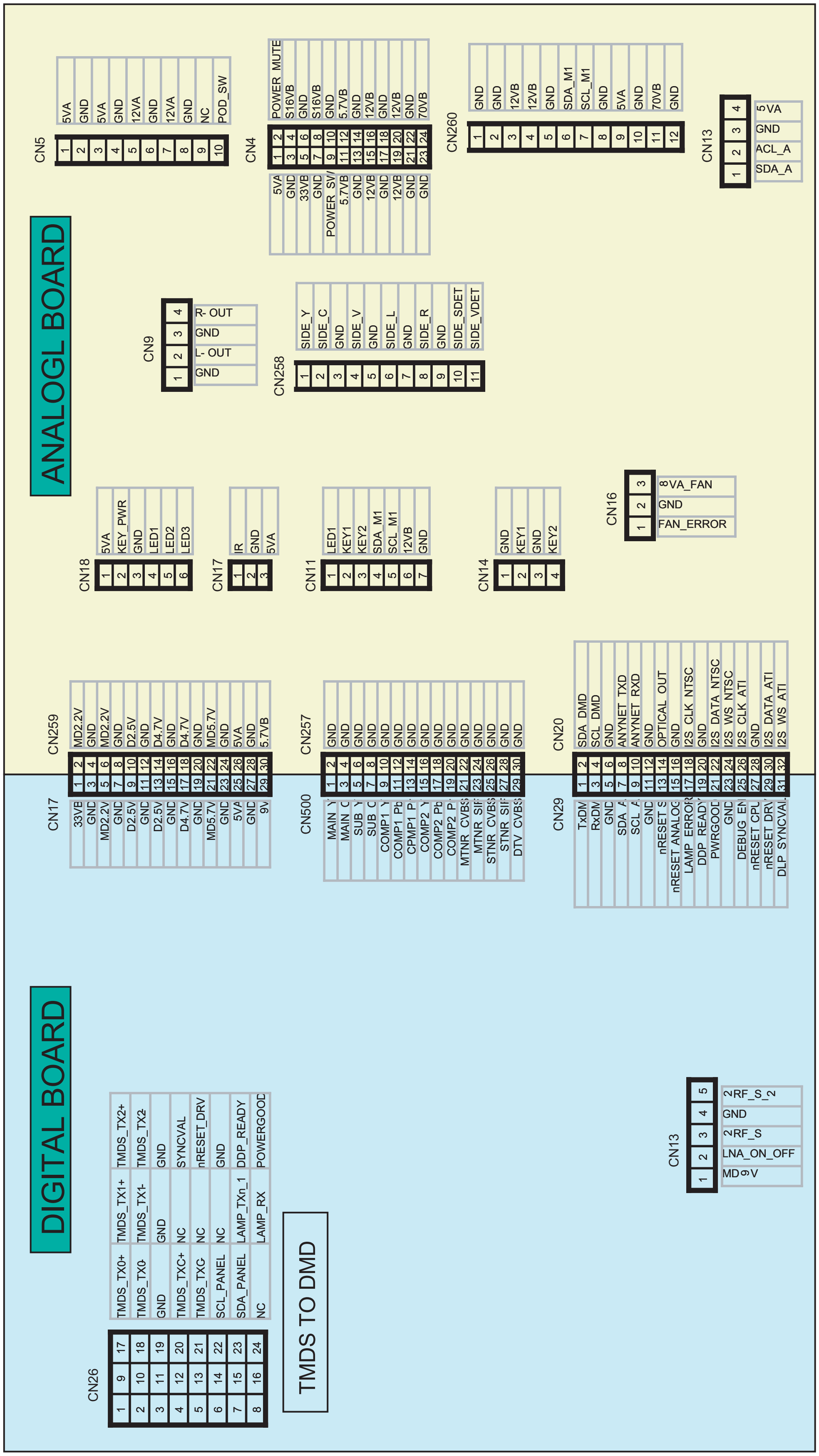
# MEMO

# 8. Wiring Diagram

## 8-1 Overall Wiring


Dynamic Black
ACTUATOR
COLOR WHEEL
BALLAST
TEMP SENSOR
POWER
CN801
CN805
CN804
DMD
CN752
CN601
CN750
CN100
CN600
CN751
DETECT
CN107
CN108
CN109
CN103
CN104
CN105
CN102
CN101
CN100
FAN2
FAN1
POWER
SIGNAL
ANALOG
CN259
CN5
CN4
CN260
CN13
CN9
CN257
CN258
CN20
CN18
CN17
CN11
CN14
CN16
DIGITAL
CN17
CN26
CN500
CN29
FAN
KEY CONTROL
FRONT LED

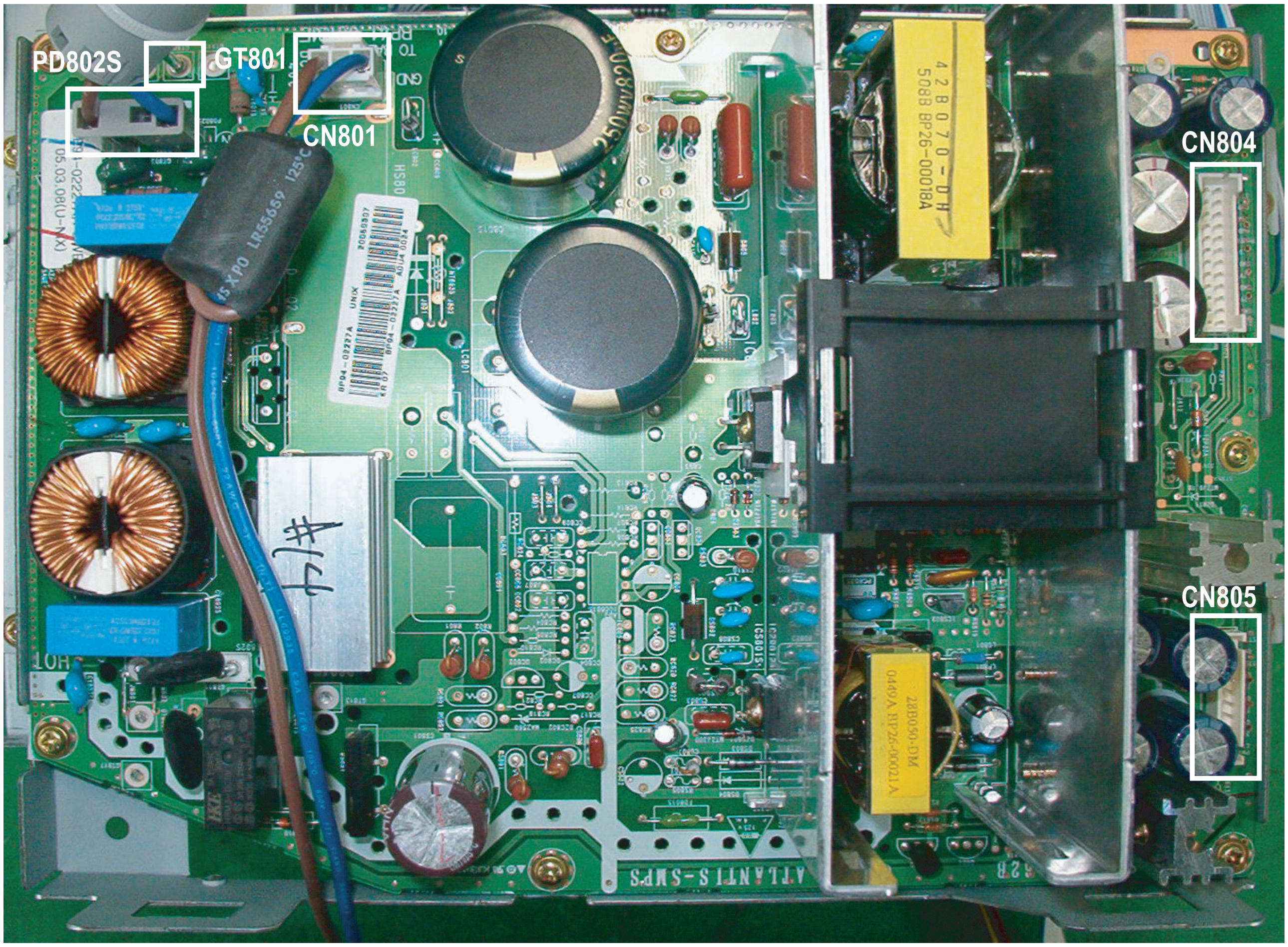
## 8-2 Connection between Analog and Digital Board


ANALOGL BOARD
DIGITAL BOARD
CN5
5VA GND 5VA GND 12VA GND 12VA GND NC POD_SW
CN4
POWER_MUTE S16VB GND S16VB GND 5.7VB GND 12VB GND 12VB GND 70VB
5VA GND 33VB GND POWER_SV 5.7VB GND 12VB GND 12VB GND GND
CN260
GND GND 12VB 12VB GND SDA_M1 SCL_M1 GND 5VA GND 70VB GND
CN13
5VA GND ACL_A SDA_A
CN9
R- OUT GND L- OUT GND
CN258
SIDE_Y SIDE_C GND SIDE_V GND SIDE_L GND SIDE_R GND SIDE_SDET SIDE_VDET
CN16
8VA_FAN GND FAN_ERROR
CN18
5VA KEY_PWR GND LED1 LED2 LED3
CN17
IR GND 5VA
CN11
LED1 KEY1 KEY2 SDA_M1 SCL_M1 12VB GND
CN14
GND KEY1 GND KEY2
CN259
MD2.2V GND MD2.2V GND D2.5V GND D4.7V GND D4.7V GND MD5.7V GND 5VA GND 5.7VB
CN17
33VE GNC MD2.2V GNC D2.5V GNC D2.5V GNC D4.7V GNC MD5.7V GNC 5VA GNC 9V
CN257
GND GND GND GND GND GND GND GND GND GND GND GND GND GND GND
CN500
MAIN_Y MAIN_C SUB_Y SUB_C COMP1_Y COMP1_Pb CPMP1_Pr COMP2_Y COMP2_Pb COMP2_Pr MTNR_CVBS MTNR_SIF STNR_CVBS STNR_SIF DTV_CVBS
CN20
SDA_DMD SCL_DMD GND ANYNET_TXD ANYNET_RXD GND OPTICAL_OUT GND I2S_CLK_NTSC GND I2S_DATA_NTSC I2S_WS_NTSC I2S_CLK_ATI GND I2S_DATA_ATI I2S_WS_ATI
CN29
TxDM RxDM GND SDA_A SCL_A GND nRESET_S nRESET_ANALOG LAMP_ERROR DDP_READY PWRGOOD GND DEBUG_EN nRESET_CPU nRESET_DRV DLP_SYNCVAL
CN13
RF_S_2 GND RF_S LNA_ON_OFF MD9V
CN26
TMDS_TX0+ TMDS_TX0- GND TMDS_TXC+ TMDS_TXC- SCL_PANEL SDA_PANEL NC
TMDS_TX1+ TMDS_TX1- GND NC NC NC LAMP_TXn_1 LAMP_RX
TMDS_TX2+ TMDS_TX2- GND SYNCVAL nRESET_DRV GND DDP_READY POWERGOOD
TMDS TO DMD

# 9. PCB Diagram

## 9-1 Power Board

### 9-1-1 Assy Power Board



- ■ DC Power Supply
  (Supplies DC power to the analog PCB. The analog board is responsible for the power supply to the digital/DMD board.)

### 9-1-2 Names & Roles of Key Parts

⋆ CN801 : Supplies power (DC220-400v) to the ballast
⋆ GT801 : Anti-lightning wire connected to the digital board. The anti-lightning wire should be installed for safety purposes.
⋆ PD802S : Inlet type of terminal that is connected to the AC power cable.

## 9-1-3 Power Board Connector Pin

CN805
Connecting Power to Analog Board

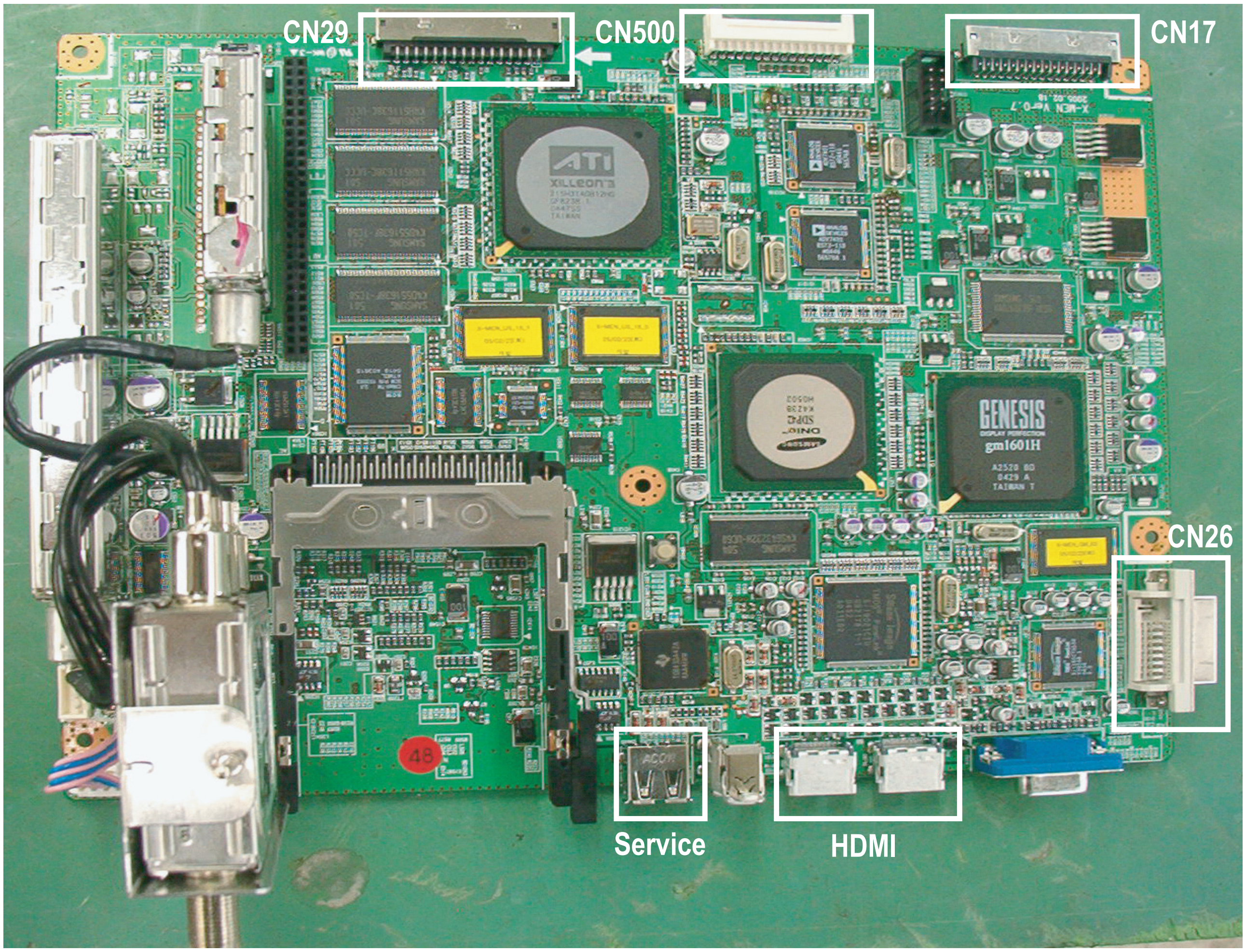
| Pin No. | Pin Name |
|---|---|
| 1 | STD 5V |
| 2 | GND |
| 3 | STD 5V |
| 4 | GND |
| 5 | 12VA |
| 6 | GND |
| 7 | 12VA |
| 8 | GND |
| 9 | 33VA |
| 10 | POD-SW |

CN804
Connecting Power to Analog Board

| Pin Name | PIN No. | | Pin Name |
|---|---|---|---|
| STD 5V | 1 | 2 | S-MUTE |
| GND | 3 | 4 | S14.5V |
| 33V | 5 | 6 | GND |
| GND | 7 | 8 | S14.5V |
| POWER-SW | 9 | 10 | GND |
| 5.5VB | 11 | 12 | 5.5VB |
| GND | 13 | 14 | GND |
| 12VB | 15 | 16 | 12VB |
| GND | 17 | 18 | GND |
| 12VB | 19 | 20 | 12VB |
| GND | 21 | 22 | GND |
| GND | 23 | 24 | 80VB |

## 9-2 Digital Board

### 9-2-1 Assy Digital Board



- All Digital Video Processing
- OSD / Menu
- Reset Switch (Reset to the CPU)
- Connected with POD channel Board.

### 9-2-2 Names & Roles of Key Parts

* CableCard :
CableCARD is a nationwide standard system that allows your local cable TV provider to supply you with an access card customized to your account. This card allows the TV to receive, decode and unscramble the premium digital channels included in your cable TV subscription without the use of a cable box.

* High Definition Multimedia Interface :
The HDMI$^{TM}$ (High Definition Multimedia Interface) supports uncompressed standard and high definition digital video formats and existing digital multi-channel audio formats.

* G-Link :
This jack is used by the TV Guide On screen system of the TV to control external analog devices such as VCRs, cable boxes, satellite receivers.

* D-Net(IEEE1394) :
These jacks allow the TV to connect to external IEEE 1394 digital products by means of a single cable.

## 9-2-3 Digital Board Connector Pin

CN17

| Pin Name (Built-In) | PIN No. | | Pin Name (Built-In) |
|---|---|---|---|
| MD2.3V | 1 | 2 | B33V |
| GND | 3 | 4 | GND |
| MD2.3V | 5 | 6 | MD2.3V |
| GND | 7 | 8 | GND |
| D2.5V | 9 | 10 | D2.5V |
| GND | 11 | 12 | GND |
| D4.7V | 13 | 14 | D2.5V |
| GND | 15 | 16 | GND |
| D4.7V | 17 | 18 | D4.7V |
| GND | 19 | 20 | GND |
| MD5.7V | 21 | 22 | MD5.7V |
| GND | 23 | 24 | GND |
| 5VA | 25 | 26 | 5VA |
| GND | 27 | 28 | GND |
| D5.7V | 29 | 30 | MD9V |

CN500

| Pin Name (Built-In) | PIN No. | | Pin Name (Built-In) |
|---|---|---|---|
| MAIN_Y | 1 | 2 | GND |
| MAIN_C | 3 | 4 | GND |
| SUB_Y_V | 5 | 6 | GND |
| SUB_C | 7 | 8 | GND |
| COMP1_Y | 9 | 10 | GND |
| COMP1_Pb | 11 | 12 | GND |
| COMP1_Pr | 13 | 14 | GND |
| COMP2_Y | 15 | 16 | GND |
| COMP2_Pb | 17 | 18 | GND |
| COMP2_Pr | 19 | 20 | GND |
| MTNR_CVBS | 21 | 22 | GND |
| MTNR_SIF | 23 | 24 | GND |
| STNR_CVBS | 25 | 26 | GND |
| STNR_SIF | 27 | 28 | GND |
| DTV_CVBS | 29 | 30 | GND |

CN29

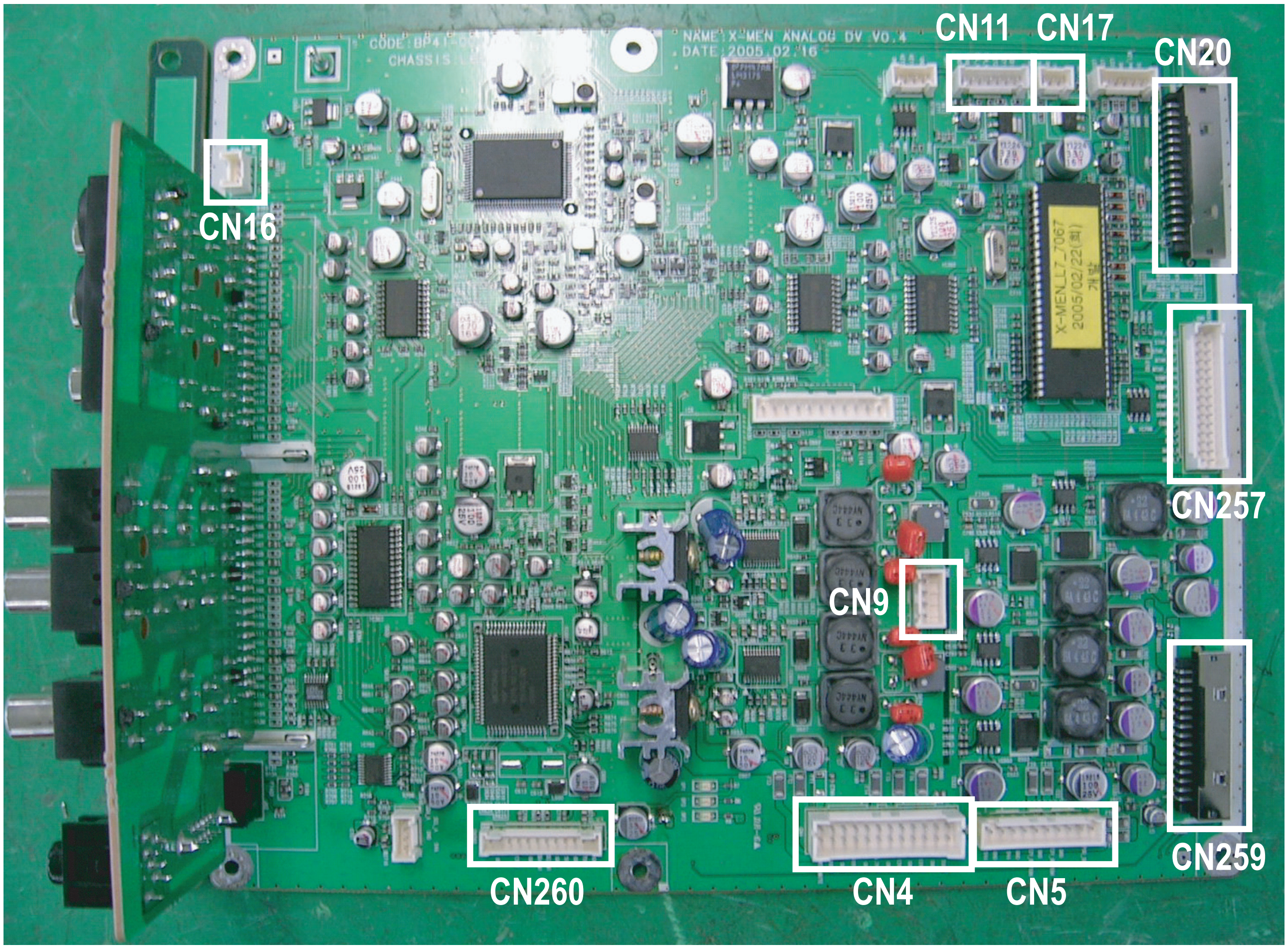
| Pin Name (Built-In) | PIN No. | | Pin Name (Built-In) |
|---|---|---|---|
| RS232_TxD | 1 | 2 | MICOM_TxD |
| RS232_RxD | 3 | 4 | MICOM_RxD |
| GND | 5 | 6 | GND |
| ANYNET_TxD | 7 | 8 | SDA_A |
| ANYNET_RxD | 9 | 10 | SCL_A |
| GND | 11 | 12 | GND |
| SPDIF_ATI | 13 | 14 | nRESET_S |
| GND | 15 | 16 | nRESET_ANALOG |
| I2S_CLK_NTSC | 17 | 18 | LAMP_ERROR |
| GND | 19 | 20 | DDP_READY |
| I2S_DATA_NTSC | 21 | 22 | PWRGOOD |
| I2S_WS_NTSC | 23 | 24 | GND |
| I2S_CLK_ATI | 25 | 26 | nDEBUG_EN |
| GND | 27 | 28 | nRESET_CPU |
| I2S_DATA_ATI | 29 | 30 | nRESET_DRV |
| I2S_WS_ATI | 31 | 32 | DLP_SYNCVAL |

CN26

| PIN No. | Pin Name | PIN No. | Pin Name | PIN No. | Pin Name |
|---|---|---|---|---|---|
| 1 | TMDS_TX0+ | 9 | TMDS_TX1+ | 17 | TMDS_TX2+ |
| 2 | TMDS_TX0- | 10 | TMDS_TX1- | 18 | TMDS_TX2- |
| 3 | GND | 11 | GND | 19 | GND |
| 4 | TMDS_TXC+ | 12 | NC | 20 | SYNCVAL |
| 5 | TMDS_TXC- | 13 | NC | 21 | nRESET_DRV |
| 6 | SCL_PANEL | 14 | NC | 22 | GND |
| 7 | SDA_PANEL | 15 | LAMP_TXn_1 | 23 | DDP_READY |
| 8 | NC | 16 | LAMP_RX | 24 | POWERGOOD |

## 9-3 Analog Board

### 9-3-1 Assy Analog Board



- Distributes supply voltage from the Power Board to Digital Board and DMD Board.
- Transfers Turn-on Command to Digital and Power Board.
- Encompasses the majority of the Audio Circuit
- Analog Video Switching / Processing
- Analog Audio Switching / Processing
- 3D Comb Processing

### 9-3-2 Names & Roles of Key Parts

* CN260 : Connected to the detect board
* CN4, CN5 : Connected to the power board - receives the second power source generated on the power board.
* CN259 : Sends the power source from the analog to the digital board.
* CN20 : This is a control signal terminal that connects between the analog and digital boards.
* CN257 : This is an AV signal terminal that connects between the analog and digital boards.

## 9-3-3 Analog Board Connector Pin

CN259

| Pin Name (Built-In) | PIN No. | | Pin Name (Built-In) |
|---|---|---|---|
| MD2.3V | 1 | 2 | B33V |
| GND | 3 | 4 | GND |
| MD2.3V | 5 | 6 | MD2.3V |
| GND | 7 | 8 | GND |
| D2.5V | 9 | 10 | D2.5V |
| GND | 11 | 12 | GND |
| D4.7V | 13 | 14 | D2.5V |
| GND | 15 | 16 | GND |
| D4.7V | 17 | 18 | D4.7V |
| GND | 19 | 20 | GND |
| MD5.7V | 21 | 22 | MD5.7V |
| GND | 23 | 24 | GND |
| 5VA | 25 | 26 | 5VA |
| GND | 27 | 28 | GND |
| D5.7V | 29 | 30 | MD9V |

CN257

| Pin Name (Built-In) | PIN No. | | Pin Name (Built-In) |
|---|---|---|---|
| MAIN_Y | 1 | 2 | GND |
| MAIN_C | 3 | 4 | GND |
| SUB_Y_V | 5 | 6 | GND |
| SUB_C | 7 | 8 | GND |
| COMP1_Y | 9 | 10 | GND |
| COMP1_Pb | 11 | 12 | GND |
| COMP1_Pr | 13 | 14 | GND |
| COMP2_Y | 15 | 16 | GND |
| COMP2_Pb | 17 | 18 | GND |
| COMP2_Pr | 19 | 20 | GND |
| MTNR_CVBS | 21 | 22 | GND |
| MTNR_SIF | 23 | 24 | GND |
| STNR_CVBS | 25 | 26 | GND |
| STNR_SIF | 27 | 28 | GND |
| DTV_CVBS | 29 | 30 | GND |

CN20

| Pin Name (Built-In) | PIN No. | | Pin Name (Built-In) |
|---|---|---|---|
| RS232_TxD | 1 | 2 | MICOM_TxD |
| RS232_RxD | 3 | 4 | MICOM_RxD |
| GND | 5 | 6 | GND |
| ANYNET_TxD | 7 | 8 | SDA_A |
| ANYNET_RxD | 9 | 10 | SCL_A |
| GND | 11 | 12 | GND |
| SPDIF_ATI | 13 | 14 | nRESET_S |
| GND | 15 | 16 | nRESET_ANALOG |
| I2S_CLK_NTSC | 17 | 18 | LAMP_ERROR |
| GND | 19 | 20 | DDP_READY |
| I2S_DATA_NTSC | 21 | 22 | PWRGOOD |
| I2S_WS_NTSC | 23 | 24 | GND |
| I2S_CLK_ATI | 25 | 26 | nDEBUG_EN |
| GND | 27 | 28 | nRESET_CPU |
| I2S_DATA_ATI | 29 | 30 | nRESET_DRV |
| I2S_WS_ATI | 31 | 32 | DLP_SYNCVAL |

CN4

| Pin Name | PIN No. | | Pin Name |
|---|---|---|---|
| 5VA | 1 | 2 | POWER_MUTE |
| GND | 3 | 4 | S16VB |
| 33VB | 5 | 6 | GND |
| GND | 7 | 8 | S16VB |
| POWER_SW | 9 | 10 | GND |
| 5.7VB | 11 | 12 | 5.7VB |
| GND | 13 | 14 | GND |
| 12VB | 15 | 16 | 12VB |
| GND | 17 | 18 | GND |
| 12VB | 19 | 20 | 12VB |
| GND | 21 | 22 | GND |
| GND | 23 | 24 | 70VB |

CN5

| Pin No. | Pin Name |
|---|---|
| 1 | 5VA |
| 2 | GND |
| 3 | 5VA |
| 4 | GND |
| 5 | 12VA |
| 6 | GND |
| 7 | 12VA |
| 8 | GND |
| 9 | NC |
| 10 | POD_SW |

CN9

Connecting and transmitting Audio signal to Speaker

| Pin No. | Pin Name |
|---|---|
| 1 | GND |
| 2 | L-OUT |
| 3 | GND |
| 4 | L-OUT |

CN11

Connecting front LED indicators

| Pin No. | Pin Name |
|---|---|
| 1 | LED1 |
| 2 | KEY1 |
| 3 | KEY2 |
| 4 | SDA_M1 |
| 5 | SCL_M1 |
| 6 | 12VB |
| 7 | GND |

CN16

Connecting the Power and Control Signal to the POD Fan

| Pin No. | Pin Name |
|---|---|
| 1 | FAN_ERROR |
| 2 | GND |
| 3 | 8VA_FAN |

CN17

Connecting the IR signal

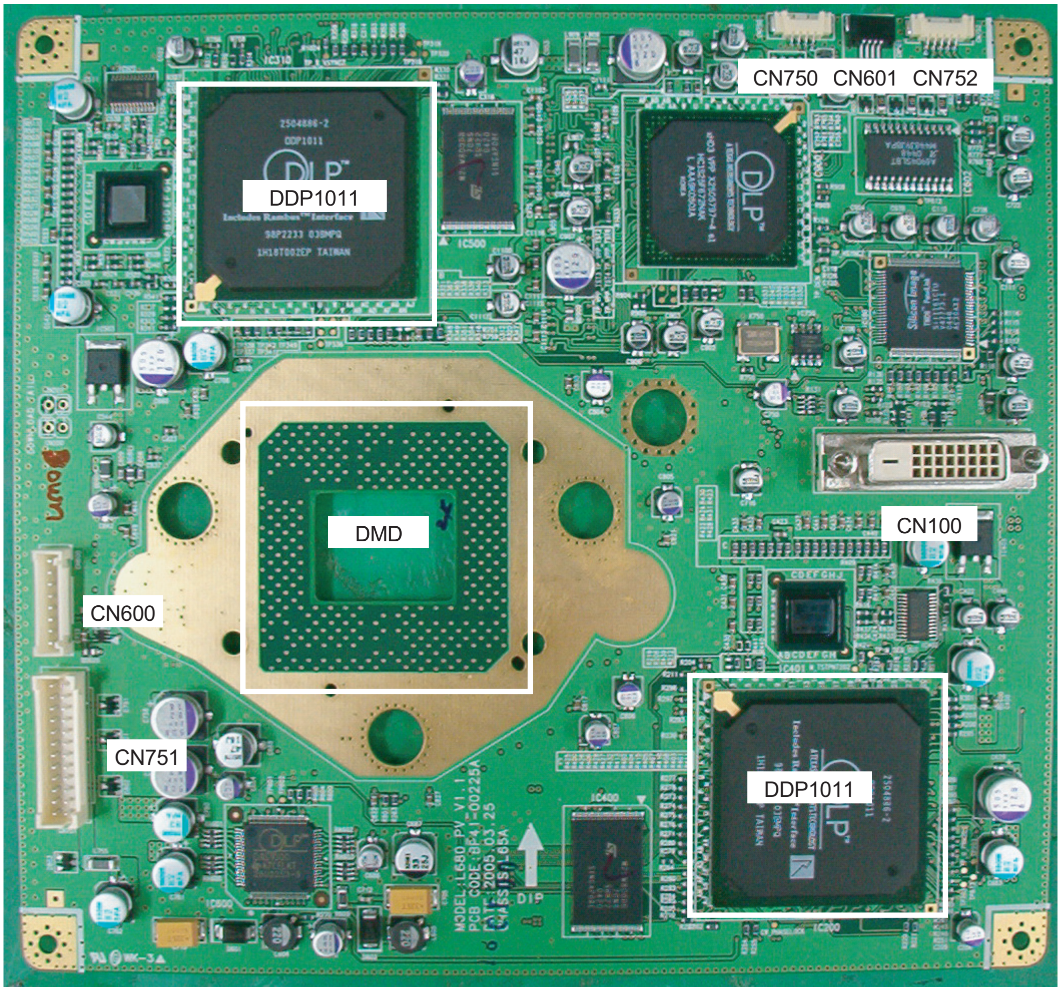
| Pin No. | Pin Name |
|---|---|
| 1 | IR |
| 2 | GND |
| 3 | 5VA |

CN260

| Pin No. | Pin Name |
|---|---|
| 1 | GND |
| 2 | GND |
| 3 | 12VB |
| 4 | 12VB |
| 5 | GND |
| 6 | SDA_M1 |
| 7 | SCL_M1 |
| 8 | GND |
| 9 | 5VA |
| 10 | GND |
| 11 | 70VB |
| 12 | GND |

# 9-4 DMD Board

## 9-4-1 Assy DMD Board



- Controls the lamp (ON/OFF)
- Drives the color wheel motor
- Drives the panel
- Controls the sensors

## 9-5-2 Names & Roles of Key Parts

⋆ CN751 : This receives the power source from the detect board and communicates with the I2C.
⋆ CN601 : This sends a 60Hz signal to the detect board.
⋆ CN600 : This supplies the power to drive the color wheel.
⋆ CN750 : This receives the color wheel rotating signals.
⋆ CN752 : This sends signals to the ballast.
⋆ CN100 : The DVI cable terminal. This receives the image data from the digital board.
⋆ DMD PANEL : This is protected with a heat sink and fixtures.
⋆ DDP1011 : This processes the DMD drive and the signals.

# MEMO

# 10. Schematic Diagram

## 10-1 Analog Board

### 10-1-1 PowerSignal

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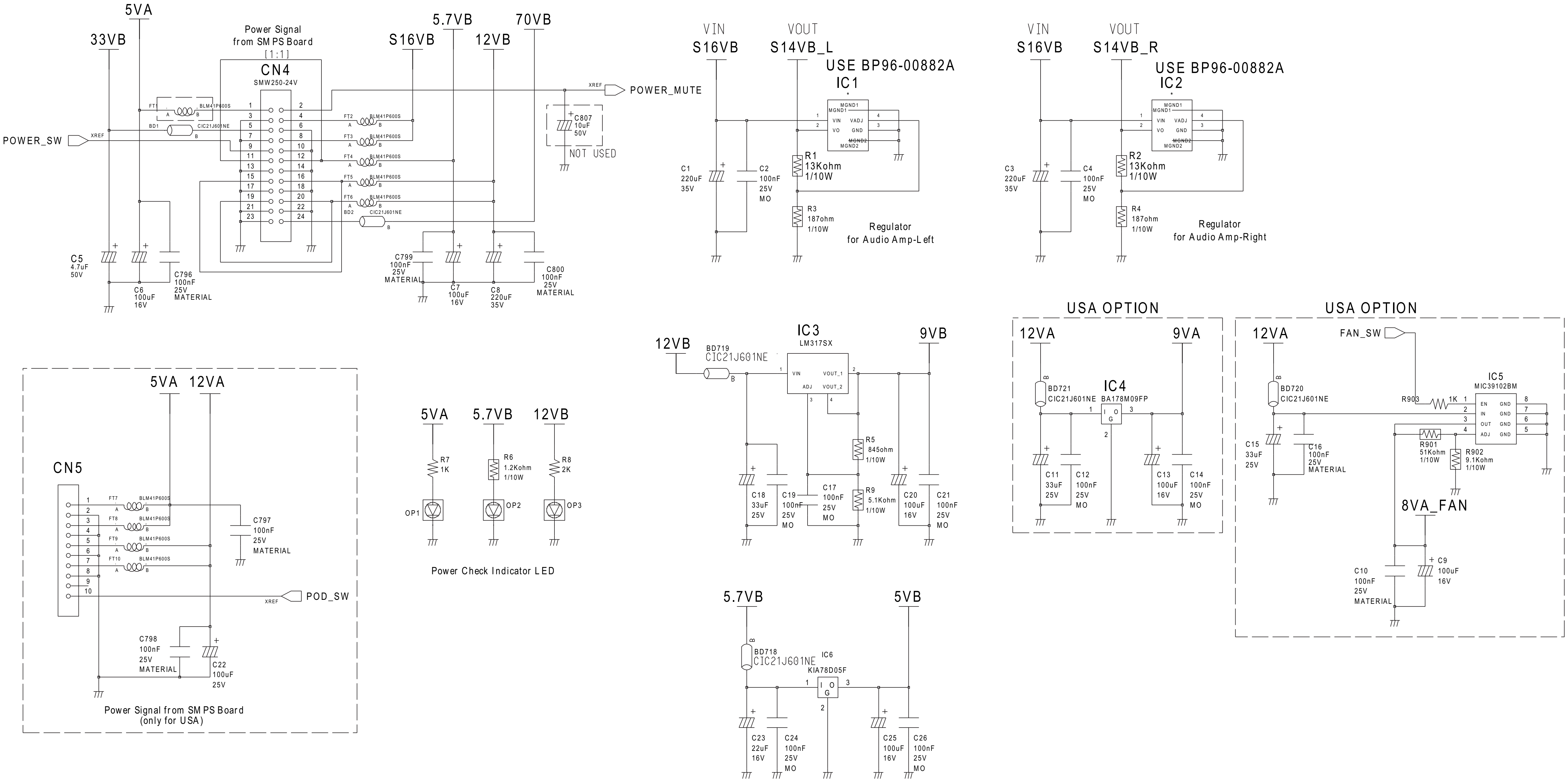
5VA
33VB
Power Signal
from SMPS Board
[1:1]
CN4
SMW250-24V
5.7VB
70VB
S16VB
12VB
POWER_SW
XREF
FT1
BLM41P600S
BD1
CIC21J601NE
FT2
FT3
FT4
FT5
FT6
BD2
XREF
POWER_MUTE
C807
10uF
50V
NOT USED
C5
4.7uF
50V
C6
100uF
16V
C796
100nF
25V
MATERIAL
C799
100nF
25V
MATERIAL
C7
100uF
16V
C8
220uF
35V
C800
100nF
25V
MATERIAL
VIN
VOUT
S16VB
S14VB_L
USE BP96-00882A
IC1
MGND1
VIN
VADJ
VO
GND
MGND2
R1
13Kohm
1/10W
C1
220uF
35V
C2
100nF
25V
MO
R3
187ohm
1/10W
Regulator
for Audio Amp-Left
VIN
VOUT
S16VB
S14VB_R
USE BP96-00882A
IC2
R2
13Kohm
1/10W
C3
220uF
35V
C4
100nF
25V
MO
R4
187ohm
1/10W
Regulator
for Audio Amp-Right
12VB
BD719
CIC21J601NE
IC3
LM317SX
VIN
VOUT_1
ADJ
VOUT_2
9VB
R5
845ohm
1/10W
R9
5.1Kohm
1/10W
C18
33uF
25V
C19
100nF
25V
MO
C17
100nF
25V
MO
C20
100uF
16V
C21
100nF
25V
MO
USA OPTION
12VA
9VA
BD721
CIC21J601NE
IC4
BA178M09FP
C11
33uF
25V
C12
100nF
25V
MO
C13
100uF
16V
C14
100nF
25V
MO
USA OPTION
12VA
FAN_SW
BD720
CIC21J601NE
IC5
MIC39102BM
R903
1K
EN
IN
OUT
ADJ
GND
C15
33uF
25V
C16
100nF
25V
MATERIAL
R901
51Kohm
1/10W
R902
9.1Kohm
1/10W
8VA_FAN
C10
100nF
25V
MATERIAL
C9
100uF
16V
5VA
12VA
CN5
FT7
FT8
FT9
FT10
BLM41P600S
C797
100nF
25V
MATERIAL
XREF
POD_SW
C798
100nF
25V
MATERIAL
C22
100uF
25V
Power Signal from SMPS Board
(only for USA)
5VA
5.7VB
12VB
R7
1K
R6
1.2Kohm
1/10W
R8
2K
OP1
OP2
OP3
Power Check Indicator LED
5.7VB
5VB
BD718
CIC21J601NE
IC6
KIA78D05F
C23
22uF
16V
C24
100nF
25V
MO
C25
100uF
16V
C26
100nF
25V
MO

## 10-1-2 AV_Input

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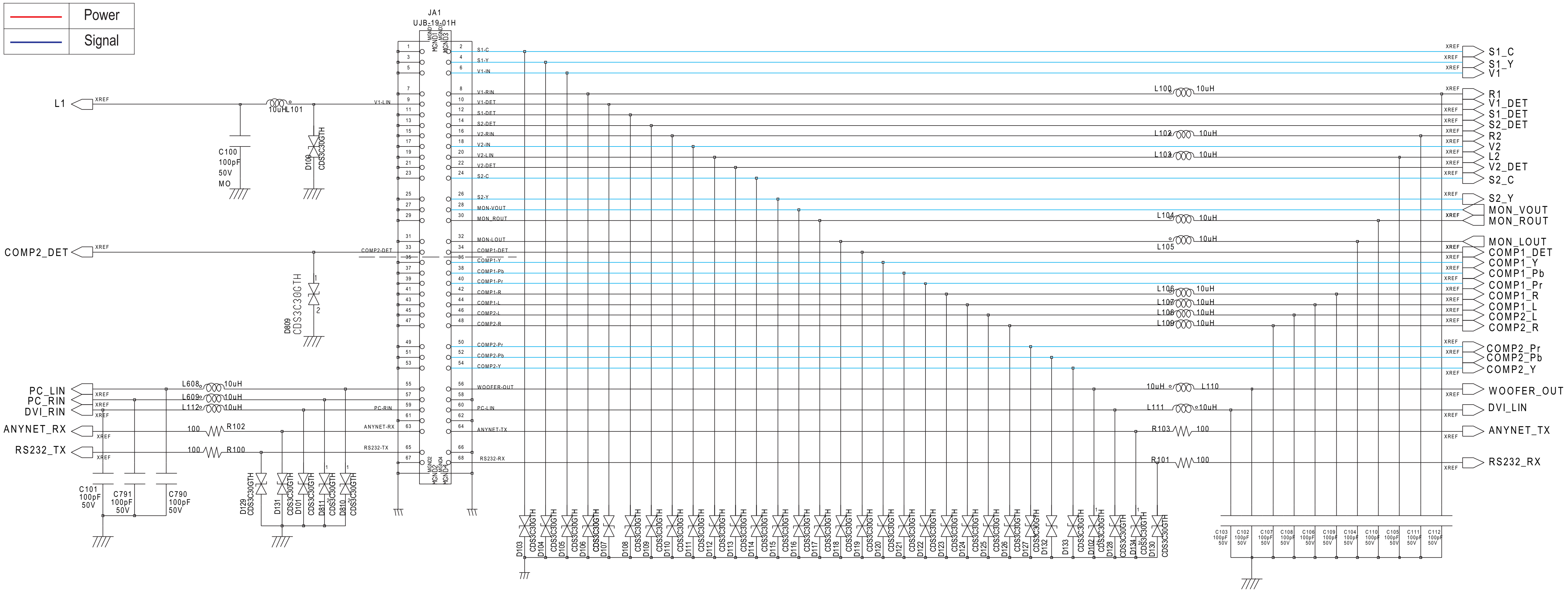
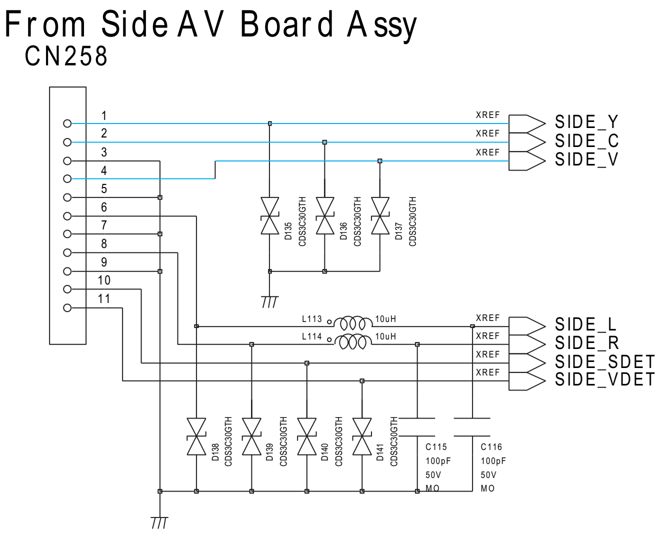
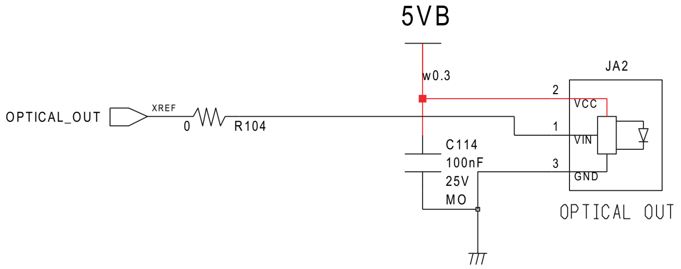

Power
Signal
JA1
UJB-19-01H
L1
COMP2_DET
PC_LIN
PC_RIN
DVI_RIN
ANYNET_RX
RS232_TX
XREF
10uH L101
C100
100pF
50V
MO
D100
CDS3C30GTH
D809
CDS3C30GTH
L608 10uH
L609 10uH
L112 10uH
100 R102
100 R100
C101
100pF
50V
C791
100pF
50V
C790
100pF
50V
D129
D131
D101
D811
D810
V1-LIN
COMP2-DET
PC-RIN
ANYNET-RX
RS232-TX
S1-C
S1-Y
V1-IN
V1-RIN
V1-DET
S1-DET
S2-DET
V2-RIN
V2-IN
V2-LIN
V2-DET
S2-C
S2-Y
MON-VOUT
MON_ROUT
MON-LOUT
COMP1-DET
COMP1-Y
COMP1-Pb
COMP1-Pr
COMP1-R
COMP1-L
COMP2-L
COMP2-R
COMP2-Pr
COMP2-Pb
COMP2-Y
WOOFER-OUT
PC-LIN
ANYNET-TX
RS232-RX
L100 10uH
L102 10uH
L103 10uH
L104 10uH
L105 10uH
L106 10uH
L107 10uH
L108 10uH
L109 10uH
10uH L110
L111 10uH
R103 100
R101 100
D103
D104
D105
D106
D107
D108
D109
D110
D111
D112
D113
D114
D115
D116
D117
D118
D119
D120
D121
D122
D123
D124
D125
D126
D127
D132
D133
D102
D128
D134
D130
CDS3C30GTH
C103
C102
C107
C108
C106
C109
C104
C110
C105
C111
C112
100pF
50V
S1_C
S1_Y
V1
R1
V1_DET
S1_DET
S2_DET
R2
V2
L2
V2_DET
S2_C
S2_Y
MON_VOUT
MON_ROUT
MON_LOUT
COMP1_DET
COMP1_Y
COMP1_Pb
COMP1_Pr
COMP1_R
COMP1_L
COMP2_L
COMP2_R
COMP2_Pr
COMP2_Pb
COMP2_Y
WOOFER_OUT
DVI_LIN
ANYNET_TX
RS232_RX


From Side AV Board Assy
CN258
1
2
3
4
5
6
7
8
9
10
11
XREF
SIDE_Y
SIDE_C
SIDE_V
D135
D136
D137
CDS3C30GTH
L113 10uH
L114 10uH
SIDE_L
SIDE_R
SIDE_SDET
SIDE_VDET
D138
D139
D140
D141
C115
100pF
50V
MO
C116
100pF
50V
MO


5VB
w0.3
OPTICAL_OUT
XREF
0
R104
C114
100nF
25V
MO
JA2
VCC
VIN
GND
OPTICAL OUT

## 10-1-3 AV_Switching

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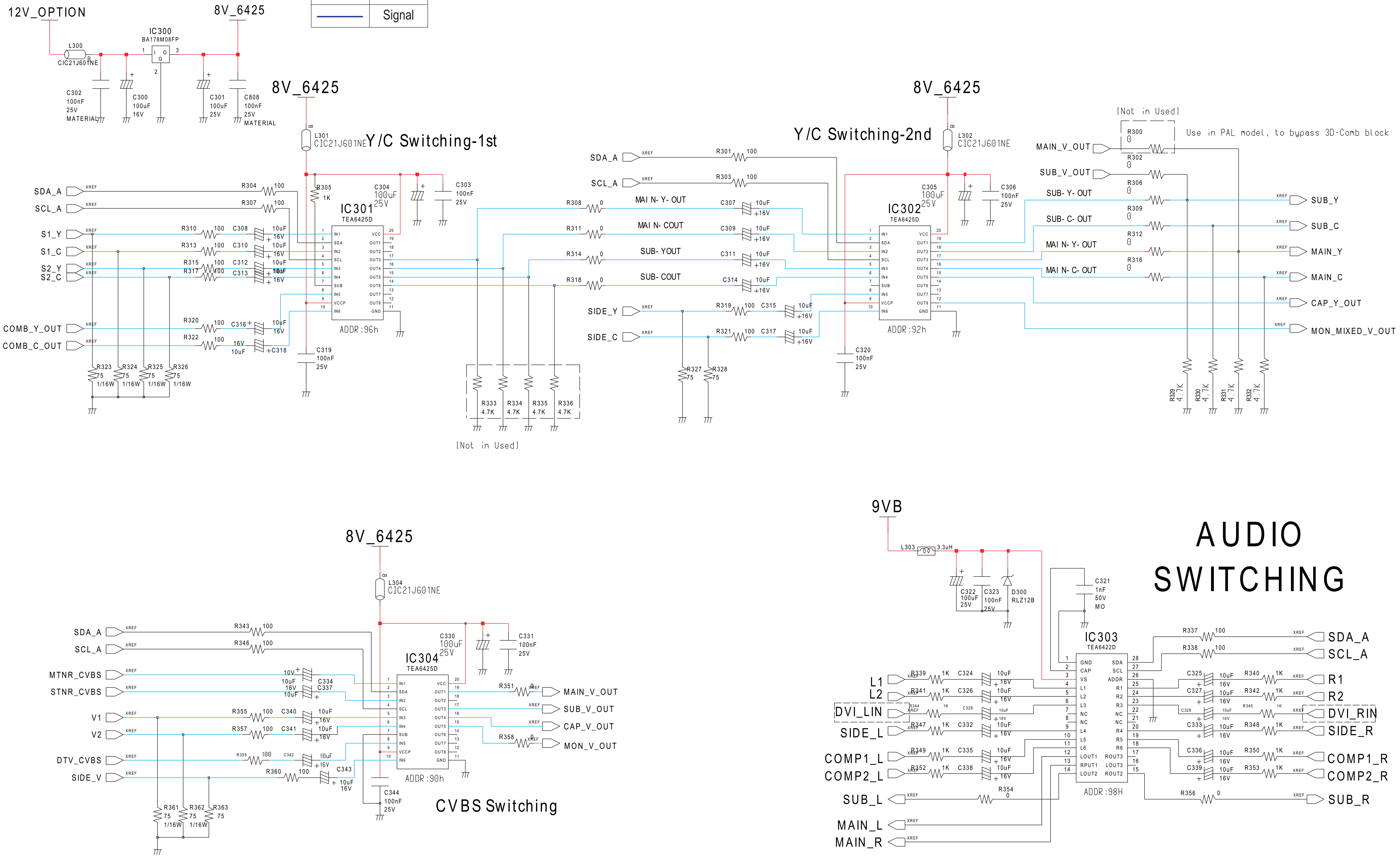
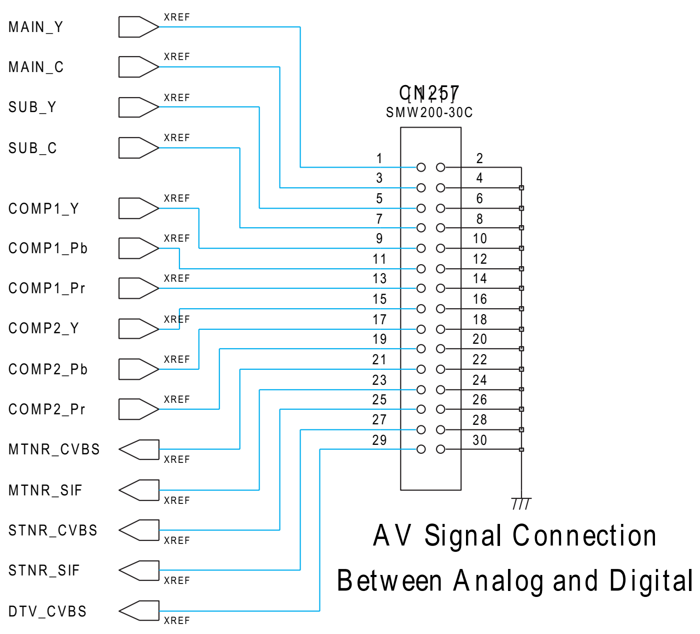
| | |
|---|---|
| 🟥 | Power |
| 🟦 | Signal |

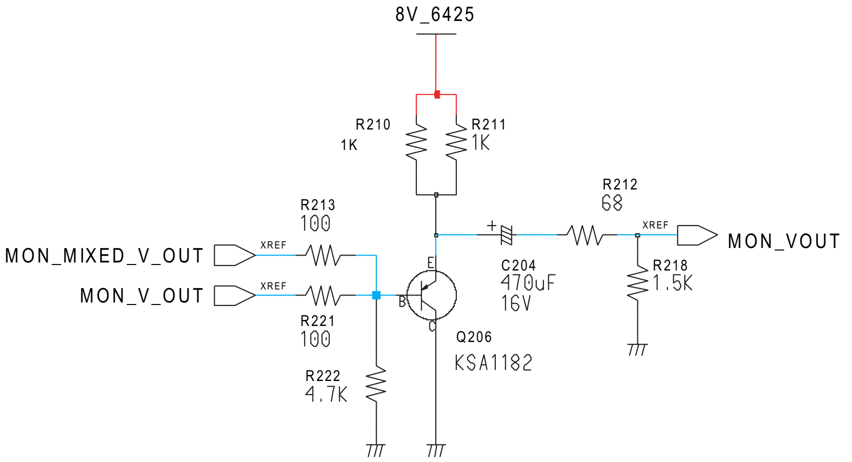

12V_OPTION
8V_6425
IC300
BA178M08FP
L300
CIC21J601NE
C302
100nF
25V
MATERIAL
C300
100uF
16V
C301
100uF
25V
C808
100nF
25V
MATERIAL
Y/C Switching-1st
L301
CIC21J601NE
IC301
TEA6425D
ADDR:96h
C304
100uF
25V
C303
100nF
25V
R305
1K
SDA_A
SCL_A
S1_Y
S1_C
S2_Y
S2_C
COMB_Y_OUT
COMB_C_OUT
R304 100
R307 100
R310 100
R313 100
R315 100
R317 100
R320 100
R322 100
C308 10uF 16V
C310 10uF 16V
C312 10uF 16V
C313 10uF 16V
C316 10uF 16V
C318 10uF 16V
C319
100nF
25V
R323 75 1/16W
R324 75 1/16W
R325 75 1/16W
R326 75 1/16W
R308 0
R311 0
R314 0
R318 0
MAIN-Y-OUT
MAIN-COUT
SUB-YOUT
SUB-COUT
C307 10uF 16V
C309 10uF 16V
C311 10uF 16V
C314 10uF 16V
R333 4.7K
R334 4.7K
R335 4.7K
R336 4.7K
[Not in Used]
SIDE_Y
SIDE_C
R319 100
R321 100
C315 10uF 16V
C317 10uF 16V
R327 75
R328 75
Y/C Switching-2nd
L302
CIC21J601NE
IC302
TEA6425D
ADDR:92h
C305
100uF
25V
C306
100nF
25V
C320
100nF
25V
R301 100
R303 100
[Not in Used]
Use in PAL model, to bypass 3D-Comb block
MAIN_V_OUT
SUB_V_OUT
SUB-Y-OUT
SUB-C-OUT
MAIN-Y-OUT
MAIN-C-OUT
R300 0
R302 0
R306 0
R309 0
R312 0
R316 0
SUB_Y
SUB_C
MAIN_Y
MAIN_C
CAP_Y_OUT
MON_MIXED_V_OUT
R329 4.7K
R330 4.7K
R331 4.7K
R332 4.7K
8V_6425
L304
CIC21J601NE
IC304
TEA6425D
ADDR:90h
C330
100uF
25V
C331
100nF
25V
C344
100nF
25V
SDA_A
SCL_A
MTNR_CVBS
STNR_CVBS
V1
V2
DTV_CVBS
SIDE_V
R343 100
R346 100
C334 10uF 16V
C337 10uF 16V
R355 100
R357 100
R359 100
R360 100
C340 10uF 16V
C341 10uF 16V
C342 10uF 16V
C343 10uF 16V
R361 75 1/16W
R362 75 1/16W
R363 75
R351 0
R358 0
MAIN_V_OUT
SUB_V_OUT
CAP_V_OUT
MON_V_OUT
CVBS Switching
9VB
L303 3.3uH
C322
100uF
25V
C323
100nF
25V
D300
RLZ12B
C321
1nF
50V
MO
AUDIO SWITCHING
IC303
TEA6422D
ADDR:98H
R337 100
R338 100
SDA_A
SCL_A
L1
L2
DVI_LIN
SIDE_L
COMP1_L
COMP2_L
SUB_L
MAIN_L
MAIN_R
R339 1K
R341 1K
R344 1K
R347 1K
R349 1K
R352 1K
C324 10uF 16V
C326 10uF 16V
C328 10uF 16V
C332 10uF 16V
C335 10uF 16V
C338 10uF 16V
R354 0
R1
R2
DVI_RIN
SIDE_R
COMP1_R
COMP2_R
SUB_R
R340 1K
R342 1K
R345 1K
R348 1K
R350 1K
R353 1K
C325 10uF 16V
C327 10uF 16V
C329 10uF 16V
C333 10uF 16V
C336 10uF 16V
C339 10uF 16V
R356 0
XREF

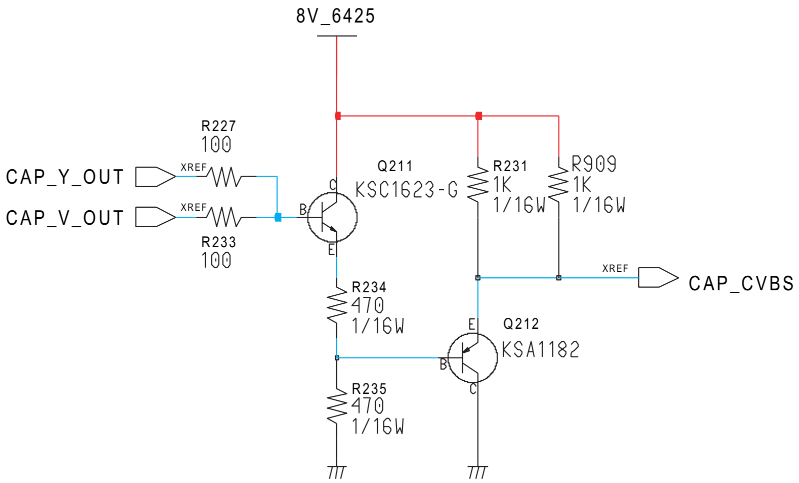
## 10-1-4 Input_Buffer

This Document can not be used without Samsung's authorization.

| | |
|---|---|
| ━━━ | Power |
| ━━━ | Signal |


MAIN_Y
MAIN_C
SUB_Y
SUB_C
COMP1_Y
COMP1_Pb
COMP1_Pr
COMP2_Y
COMP2_Pb
COMP2_Pr
MTNR_CVBS
MTNR_SIF
STNR_CVBS
STNR_SIF
DTV_CVBS
XREF
CN257
SMW200-30C
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
AV Signal Connection
Between Analog and Digital


8V_6425
R210
1K
R211
1K
R213
100
R212
68
MON_MIXED_V_OUT
MON_V_OUT
XREF
C204
470uF
16V
R218
1.5K
MON_VOUT
R221
100
R222
4.7K
Q206
KSA1182
E
B
C


8V_6425
R227
100
CAP_Y_OUT
CAP_V_OUT
XREF
Q211
KSC1623-G
R231
1K
1/16W
R909
1K
1/16W
R233
100
CAP_CVBS
R234
470
1/16W
Q212
KSA1182
R235
470
1/16W
C
B
E

## 10-1-5 3D_Comb

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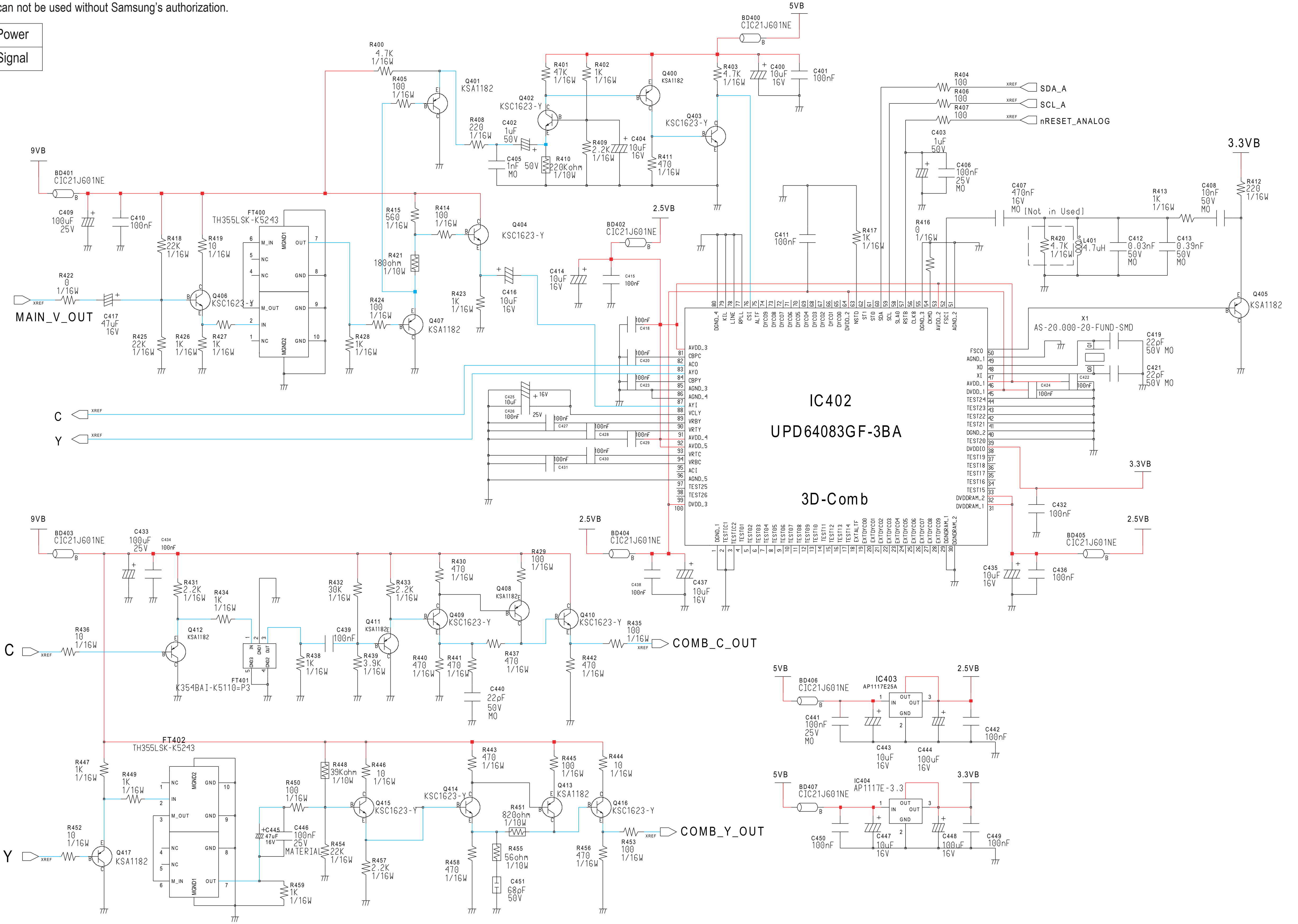
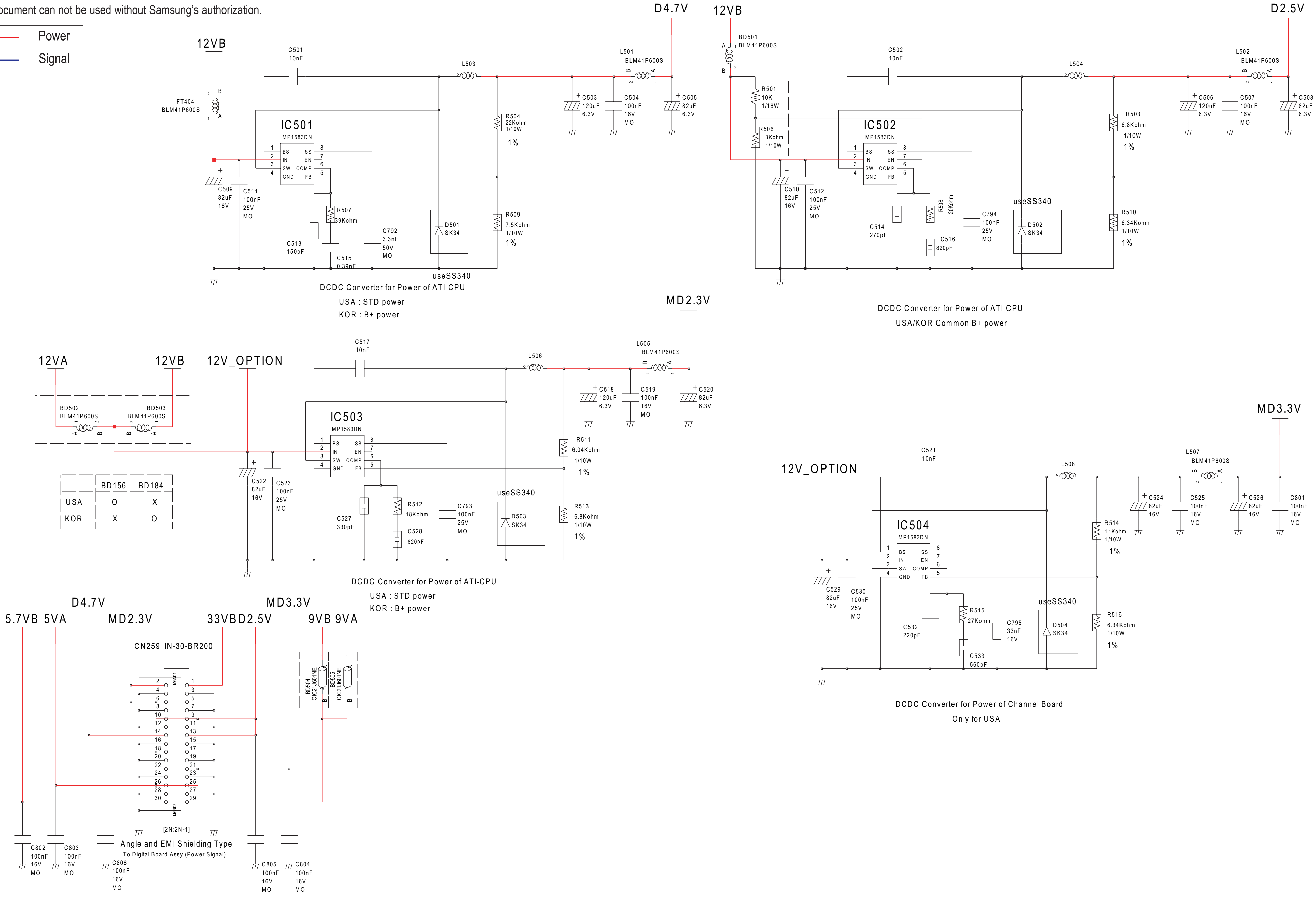
| | |
|---|---|
| — | Power |
| — | Signal |


5VB
BD400 CIC21J601NE
R400 4.7K 1/16W
R405 100 1/16W
Q401 KSA1182
R401 47K 1/16W
R402 1K 1/16W
Q400 KSA1182
R403 4.7K 1/16W
C400 10uF 16V
C401 100nF
Q402 KSC1623-Y
R408 220 1/16W
C402 1uF 50V
C405 1nF 50V MO
R410 220Kohm 1/10W
R409 2.2K 1/16W
C404 10uF 16V
Q403 KSC1623-Y
R411 470 1/16W
R404 100
R406 100
R407 100
SDA_A
SCL_A
nRESET_ANALOG
C403 1uF 50V
C406 100nF 25V MO
3.3VB
9VB
BD401 CIC21J601NE
C409 100uF 25V
C410 100nF
FT400 TH355LSK-K5243
R418 22K 1/16W
R419 10 1/16W
R415 560 1/16W
R414 100 1/16W
Q404 KSC1623-Y
R421 180ohm 1/10W
R422 0 1/16W
Q406 KSC1623-Y
MAIN_V_OUT
C417 47uF 16V
R425 22K 1/16W
R426 1K 1/16W
R427 1K 1/16W
R424 100 1/16W
Q407 KSA1182
R428 1K 1/16W
R423 1K 1/16W
C416 10uF 16V
2.5VB
BD402 CIC21J601NE
C414 10uF 16V
C415 100nF
C411 100nF
R417 1K 1/16W
R416 0 1/16W
C407 470nF 16V MO [Not in Used]
R420 4.7K 1/16W
L401 4.7uH
C412 0.03nF 50V MO
C413 0.39nF 50V MO
R413 1K 1/16W
C408 10nF 50V MO
R412 220 1/16W
Q405 KSA1182
X1 AS-20.000-20-FUND-SMD
C419 22pF 50V MO
C421 22pF 50V MO
C
Y
IC402
UPD64083GF-3BA
3D-Comb
3.3VB
C432 100nF
2.5VB
BD405 CIC21J601NE
C435 10uF 16V
C436 100nF
9VB
BD403 CIC21J601NE
C433 100uF 25V
C434 100nF
R431 2.2K 1/16W
R434 1K 1/16W
Q412 KSA1182
R436 10 1/16W
FT401 K354BAI-K5110=P3
R432 30K 1/16W
R433 2.2K 1/16W
Q411 KSA1182
C439 100nF
R438 1K 1/16W
R439 3.9K 1/16W
R430 470 1/16W
Q408 KSA1182
Q409 KSC1623-Y
R440 470 1/16W
R441 470 1/16W
C440 22pF 50V MO
R437 470 1/16W
R429 100 1/16W
Q410 KSC1623-Y
R435 100 1/16W
COMB_C_OUT
R442 470 1/16W
2.5VB
BD404 CIC21J601NE
C438 100nF
C437 10uF 16V
5VB
BD406 CIC21J601NE
IC403 AP1117E25A
2.5VB
C441 100nF 25V MO
C443 10uF 16V
C444 100uF 16V
C442 100nF
5VB
BD407 CIC21J601NE
IC404 AP1117E-3.3
3.3VB
C450 100nF
C447 10uF 16V
C448 100uF 16V
C449 100nF
FT402 TH355LSK-K5243
R447 1K 1/16W
R449 1K 1/16W
R452 10 1/16W
Q417 KSA1182
R450 100 1/16W
C445 47uF 16V
C446 100nF 25V MATERIAL
R448 39Kohm 1/10W
R454 22K 1/16W
R459 1K 1/16W
R446 10 1/16W
Q415 KSC1623-Y
R457 2.2K 1/16W
Q414 KSC1623-Y
R443 470 1/16W
R458 470 1/16W
R451 820ohm 1/10W
R455 56ohm 1/10W
C451 68pF 50V
R445 100 1/16W
Q413 KSA1182
R444 10 1/16W
Q416 KSC1623-Y
R456 470 1/16W
R453 100 1/16W
COMB_Y_OUT

## 10-1-6 DC-DC

This Document can not be used without Samsung's authorization.

| | |
|---|---|
| — | Power |
| — | Signal |


12VB
D4.7V
FT404
BLM41P600S
C501
10nF
L503
L501
BLM41P600S
IC501
MP1583DN
BS SS EN COMP SW GND FB IN
C503 120uF 6.3V
C504 100nF 16V MO
C505 82uF 6.3V
R504 22Kohm 1/10W 1%
C509 82uF 16V
C511 100nF 25V MO
R507 39Kohm
C513 150pF
C515 0.39nF
C792 3.3nF 50V MO
D501 SK34
useSS340
R509 7.5Kohm 1/10W 1%
12VB
D2.5V
BD501 BLM41P600S
R501 10K 1/16W
R506 3Kohm 1/10W
C502 10nF
L504
L502 BLM41P600S
IC502
MP1583DN
C506 120uF 6.3V
C507 100nF 16V MO
C508 82uF 6.3V
R503 6.8Kohm 1/10W 1%
C510 82uF 16V
C512 100nF 25V MO
C514 270pF
R508 20Kohm
C516 820pF
C794 100nF 25V MO
useSS340
D502 SK34
R510 6.34Kohm 1/10W 1%
MD2.3V
12VA
12VB
12V_OPTION
BD502 BLM41P600S
BD503 BLM41P600S
C517 10nF
L506
L505 BLM41P600S
IC503
MP1583DN
C518 120uF 6.3V
C519 100nF 16V MO
C520 82uF 6.3V
R511 6.04Kohm 1/10W 1%
C522 82uF 16V
C523 100nF 25V MO
C527 330pF
R512 18Kohm
C528 820pF
C793 100nF 25V MO
useSS340
D503 SK34
R513 6.8Kohm 1/10W 1%
MD3.3V
12V_OPTION
C521 10nF
L508
L507 BLM41P600S
IC504
MP1583DN
C524 82uF 16V
C525 100nF 16V MO
C526 82uF 16V
C801 100nF 16V MO
R514 11Kohm 1/10W 1%
C529 82uF 16V
C530 100nF 25V MO
C532 220pF
R515 27Kohm
C533 560pF
C795 33nF 16V
useSS340
D504 SK34
R516 6.34Kohm 1/10W 1%
D4.7V
MD3.3V
5.7VB
5VA
MD2.3V
33VB
D2.5V
9VB
9VA
CN259 IN-30-BR200
BD504 CIC21J601NE
BD505 CIC21J601NE
[2N:2N-1]
C802 100nF 16V MO
C803 100nF 16V MO
C806 100nF 16V MO
C805 100nF 16V MO
C804 100nF 16V MO

| | BD156 | BD184 |
|---|---|---|
| USA | O | X |
| KOR | X | O |

DCDC Converter for Power of ATI-CPU
USA : STD power
KOR : B+ power

DCDC Converter for Power of ATI-CPU
USA/KOR Common B+ power

DCDC Converter for Power of ATI-CPU
USA : STD power
KOR : B+ power

DCDC Converter for Power of Channel Board
Only for USA

Angle and EMI Shielding Type
To Digital Board Assy (Power Signal)

## 10-1-7 Sound Processor/Amp

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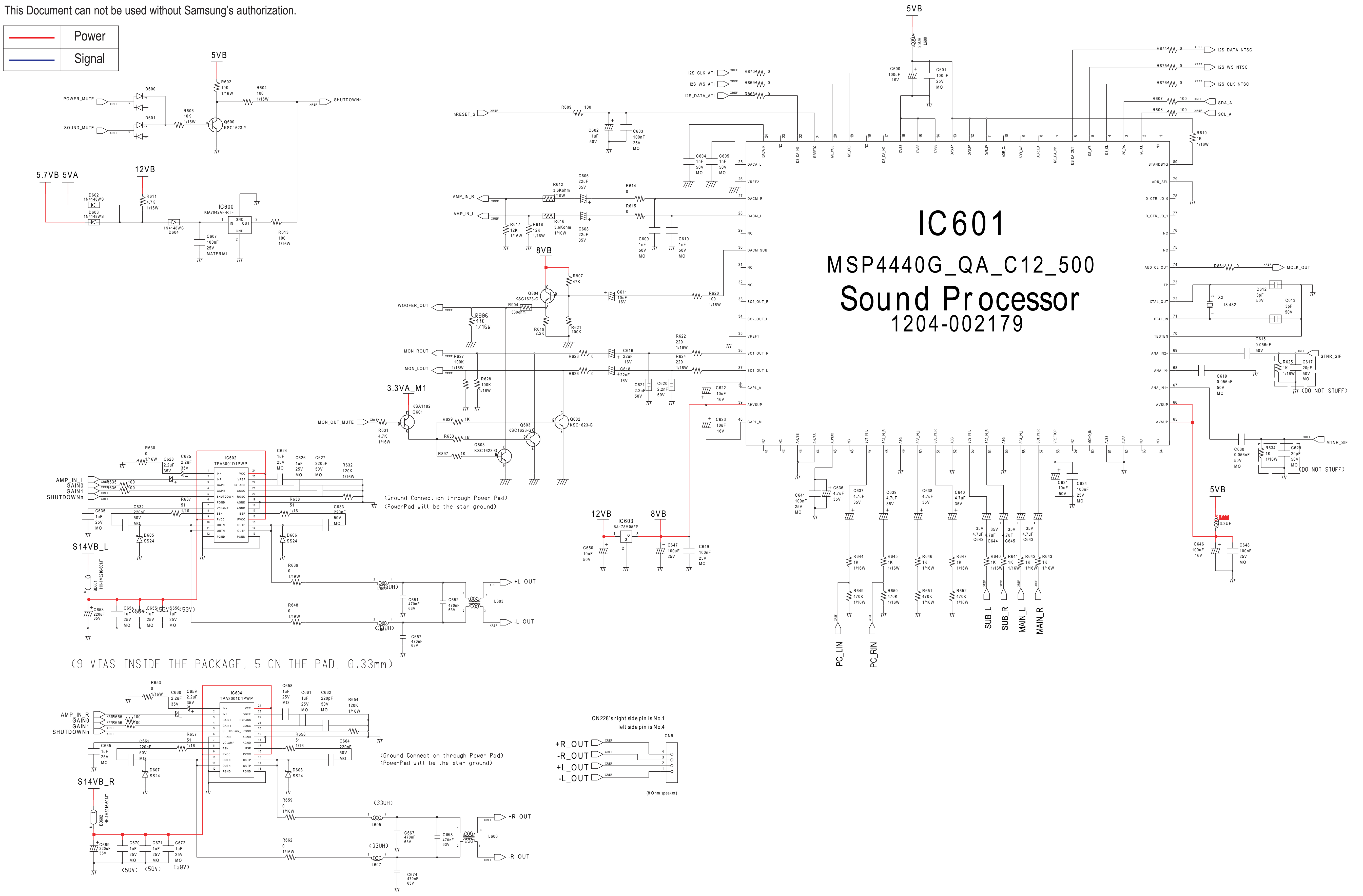
Power
Signal
5VB
12VB
8VB
5.7VB 5VA
3.3VA_M1
S14VB_L
S14VB_R
POWER_MUTE
SOUND_MUTE
SHUTDOWNn
IC600
KIA7042AF-RTF
Q600
KSC1623-Y
nRESET_S
I2S_CLK_ATI
I2S_WS_ATI
I2S_DATA_ATI
I2S_DATA_NTSC
I2S_WS_NTSC
I2S_CLK_NTSC
SDA_A
SCL_A
MCLK_OUT
STNR_SIF
MTNR_SIF
AMP_IN_R
AMP_IN_L
WOOFER_OUT
MON_ROUT
MON_LOUT
MON_OUT_MUTE
IC601
MSP4440G_QA_C12_500
Sound Processor
1204-002179
X2
18.432
Q601
KSA1182
Q602
KSC1623-G
Q603
KSC1623-G
Q604
KSC1623-G
IC602
TPA3001D1PWP
IC604
TPA3001D1PWP
AMP_IN_L
GAIN0
GAIN1
SHUTDOWNn
AMP_IN_R
(Ground Connection through Power Pad)
(PowerPad will be the star ground)
(9 VIAS INSIDE THE PACKAGE, 5 ON THE PAD, 0.33mm)
IC603
BA178M08FP
+L_OUT
-L_OUT
+R_OUT
-R_OUT
L603
L605
L606
L607
(33UH)
(DO NOT STUFF)
SUB_L
SUB_R
MAIN_L
MAIN_R
PC_LIN
PC_RIN
CN228's right side pin is No.1
left side pin is No.4
CN9
(8 Ohm speaker)

## 10-1-8 M1_PCF8574_UART

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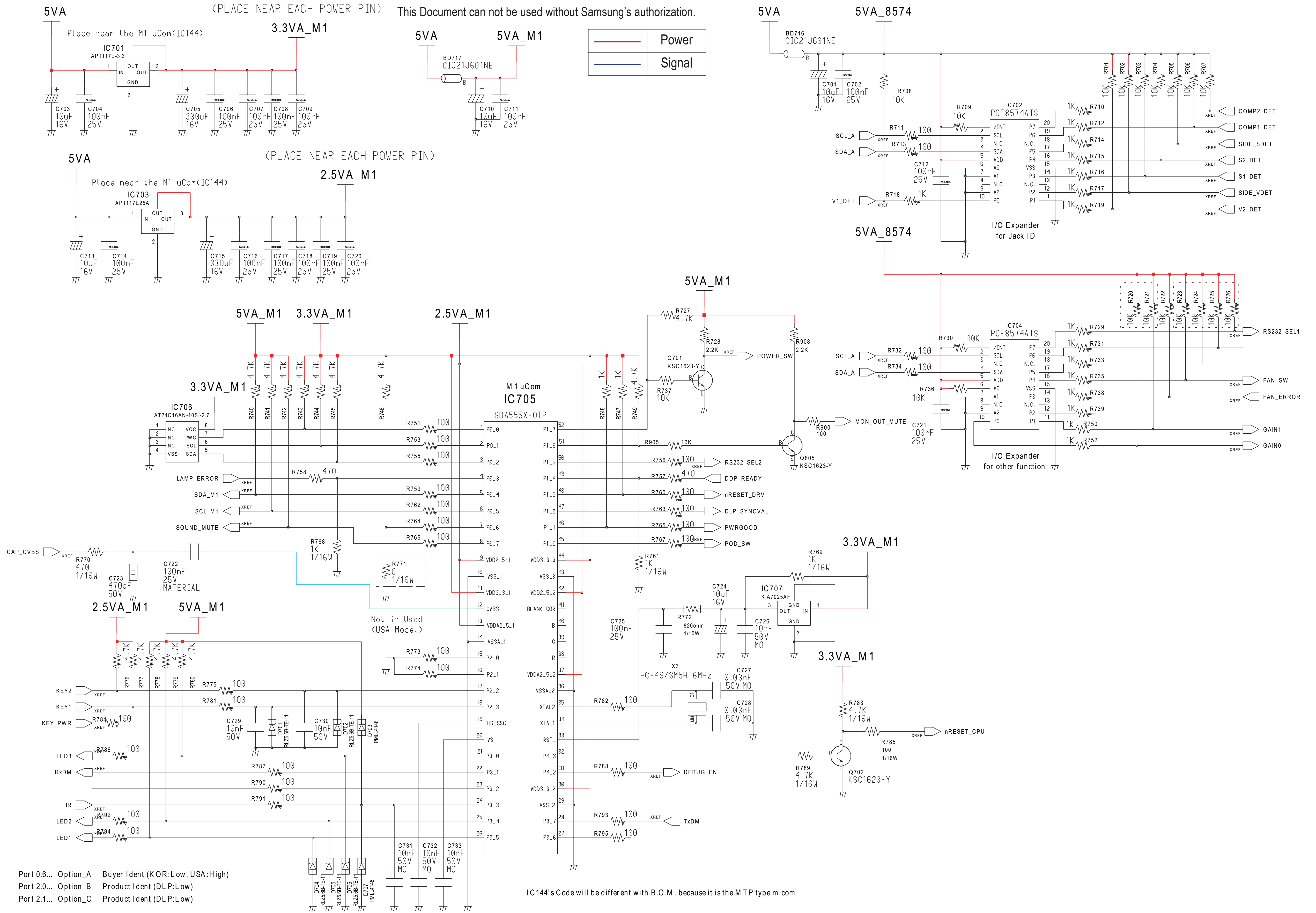

5VA
(PLACE NEAR EACH POWER PIN)
Place near the M1 uCom(IC144)
3.3VA_M1
IC701
AP1117E-3.3
C703 10uF 16V
C704 100nF 25V
C705 330uF 16V
C706 100nF 25V
C707 100nF 25V
C708 100nF 25V
C709 100nF 25V
5VA_M1
BD717
CIC21J601NE
C710 10uF 16V
C711 100nF 25V
Power
Signal
IC703
AP1117E25A
2.5VA_M1
C713 10uF 16V
C714 100nF 25V
C715 330uF 16V
C716 100nF 25V
C717 100nF 25V
C718 100nF 25V
C719 100nF 25V
C720 100nF 25V
5VA_8574
BD716
CIC21J601NE
C701 10uF 16V
C702 100nF 25V
R708 10K
R709 10K
IC702
PCF8574ATS
SCL_A
SDA_A
V1_DET
C712 100nF 25V
COMP2_DET
COMP1_DET
SIDE_SDET
S2_DET
S1_DET
SIDE_VDET
V2_DET
I/O Expander for Jack ID
IC704
PCF8574ATS
RS232_SEL1
FAN_SW
FAN_ERROR
GAIN1
GAIN0
MON_OUT_MUTE
C721 100nF 25V
I/O Expander for other function
R727 4.7K
R728 2.2K
R908 2.2K
POWER_SW
Q701 KSC1623-Y
R737 10K
R905 10K
R900 100
Q805 KSC1623-Y
IC706
AT24C16AN-10SI-2.7
M1 uCom
IC705
SDA555X-OTP
LAMP_ERROR
SDA_M1
SCL_M1
SOUND_MUTE
CAP_CVBS
R770 470 1/16W
C723 470pF 50V
C722 100nF 25V MATERIAL
R768 1K 1/16W
R771 0 1/16W
Not in Used (USA Model)
RS232_SEL2
DDP_READY
nRESET_DRV
DLP_SYNCVAL
PWRGOOD
POD_SW
R761 1K 1/16W
R769 1K 1/16W
IC707
KIA7025AF
C724 10uF 16V
C725 100nF 25V
C726 10nF 50V MO
R772 820ohm 1/10W
X3
HC-49/SM5H 6MHz
C727 0.03nF 50V MO
C728 0.03nF 50V MO
DEBUG_EN
TxDM
R783 4.7K 1/16W
nRESET_CPU
R785 100 1/16W
R789 4.7K 1/16W
Q702 KSC1623-Y
KEY2
KEY1
KEY_PWR
LED3
RxDM
IR
LED2
LED1
C729 10nF 50V
C730 10nF 50V
C731 10nF 50V MO
C732 10nF 50V MO
C733 10nF 50V MO
D701 RLZ5.6B-TE-11
D702 RLZ5.6B-TE-11
D703 PMLL4148
D704 RLZ5.6B-TE-11
D705 RLZ5.6B-TE-11
D706 RLZ5.6B-TE-11
D707 PMLL4148

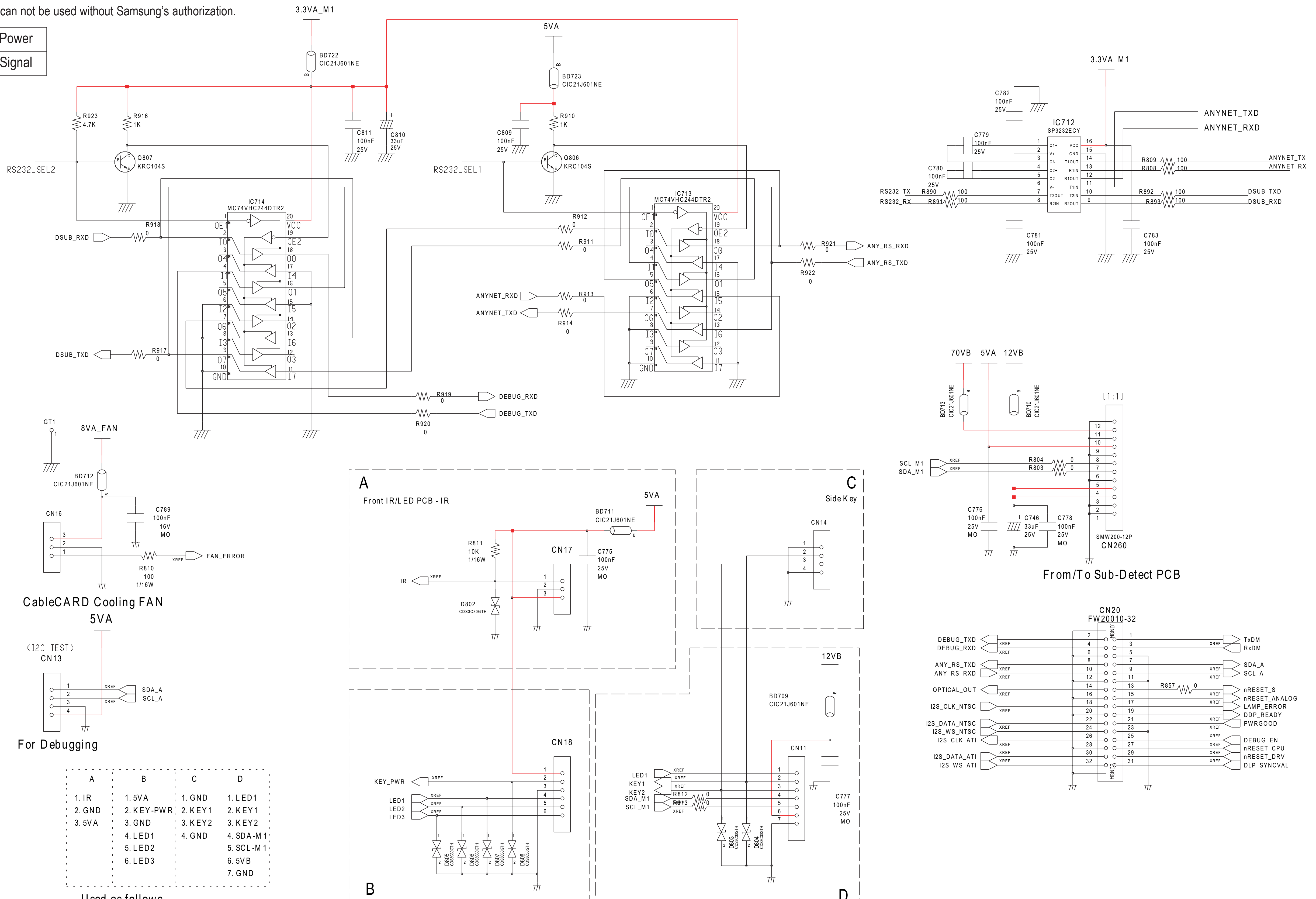
Port 0.6... Option_A Buyer Ident (KOR:Low, USA:High)
Port 2.0... Option_B Product Ident (DLP:Low)
Port 2.1... Option_C Product Ident (DLP:Low)

IC144's Code will be different with B.O.M. because it is the MTP type micom

## 10-1-9 Signal Connection

This Document can not be used without Samsung's authorization.

| | |
|---|---|
| — | Power |
| — | Signal |


3.3VA_M1
BD722 CIC21J601NE
5VA
BD723 CIC21J601NE
R923 4.7K
R916 1K
Q807 KRC104S
RS232_SEL2
C811 100nF 25V
C810 33uF 25V
C809 100nF 25V
R910 1K
Q806 KRC104S
RS232_SEL1
IC714 MC74VHC244DTR2
IC713 MC74VHC244DTR2
OE1 1O 0I 04 I1 05 I2 06 I3 07 GND
VCC OE2 O0 I4 O1 I5 O2 I6 O3 I7
R918 0
DSUB_RXD
R917 0
DSUB_TXD
R912 0
R911 0
R913 0
R914 0
ANYNET_RXD
ANYNET_TXD
R921 0
ANY_RS_RXD
ANY_RS_TXD
R922 0
R919 0
DEBUG_RXD
R920 0
DEBUG_TXD
3.3VA_M1
C782 100nF 25V
C779 100nF 25V
C780 100nF 25V
IC712 SP3232ECY
C1+ V+ C1- C2+ C2- V- T2OUT R2IN
VCC GND T1OUT R1IN R1OUT T1IN T2IN R2OUT
ANYNET_TXD
ANYNET_RXD
R809 100
R808 100
ANYNET_TX
ANYNET_RX
RS232_TX R890 100
RS232_RX R891 100
R892 100
R893 100
DSUB_TXD
DSUB_RXD
C781 100nF 25V
C783 100nF 25V
70VB 5VA 12VB
BD713 CIC21J601NE
BD710 CIC21J601NE
[1:1]
SCL_M1
SDA_M1
R804 0
R803 0
C776 100nF 25V MO
C746 33uF 25V
C778 100nF 25V MO
SMW200-12P
CN260
From/To Sub-Detect PCB
GT1
8VA_FAN
BD712 CIC21J601NE
C789 100nF 16V MO
CN16
R810 100 1/16W
FAN_ERROR
CableCARD Cooling FAN
5VA
(I2C TEST)
CN13
SDA_A
SCL_A
For Debugging
A
Front IR/LED PCB - IR
5VA
BD711 CIC21J601NE
R811 10K 1/16W
CN17
C775 100nF 25V MO
IR
D802 CDS3C30GTH
C
Side Key
CN14
B
Front IR/LED PCB - LED
CN18
KEY_PWR
LED1
LED2
LED3
D805 D806 D807 D808 CDS3C30GTH
12VB
BD709 CIC21J601NE
CN11
LED1
KEY1
KEY2
SDA_M1
SCL_M1
R812 0
R813 0
C777 100nF 25V MO
D803 D804 CDS3C30GTH
L7 CABINET
D
Front KEY/LED
CN20
FW20010-32
DEBUG_TXD
DEBUG_RXD
ANY_RS_TXD
ANY_RS_RXD
OPTICAL_OUT
I2S_CLK_NTSC
I2S_DATA_NTSC
I2S_WS_NTSC
I2S_CLK_ATI
I2S_DATA_ATI
I2S_WS_ATI
TxDM
RxDM
SDA_A
SCL_A
R857 0
nRESET_S
nRESET_ANALOG
LAMP_ERROR
DDP_READY
PWRGOOD
DEBUG_EN
nRESET_CPU
nRESET_DRV
DLP_SYNCVAL
XREF

| A | B | C | D |
|---|---|---|---|
| 1. IR | 1. 5VA | 1. GND | 1. LED1 |
| 2. GND | 2. KEY-PWR | 2. KEY1 | 2. KEY1 |
| 3. 5VA | 3. GND | 3. KEY2 | 3. KEY2 |
| | 4. LED1 | 4. GND | 4. SDA-M1 |
| | 5. LED2 | | 5. SCL-M1 |
| | 6. LED3 | | 6. 5VB |
| | | | 7. GND |

Used as follows...

L3 : A+B, C
L5 : A, B, C
L7 : A, D

## 10-2 Digital Board

### 10-2-1 Digital-1

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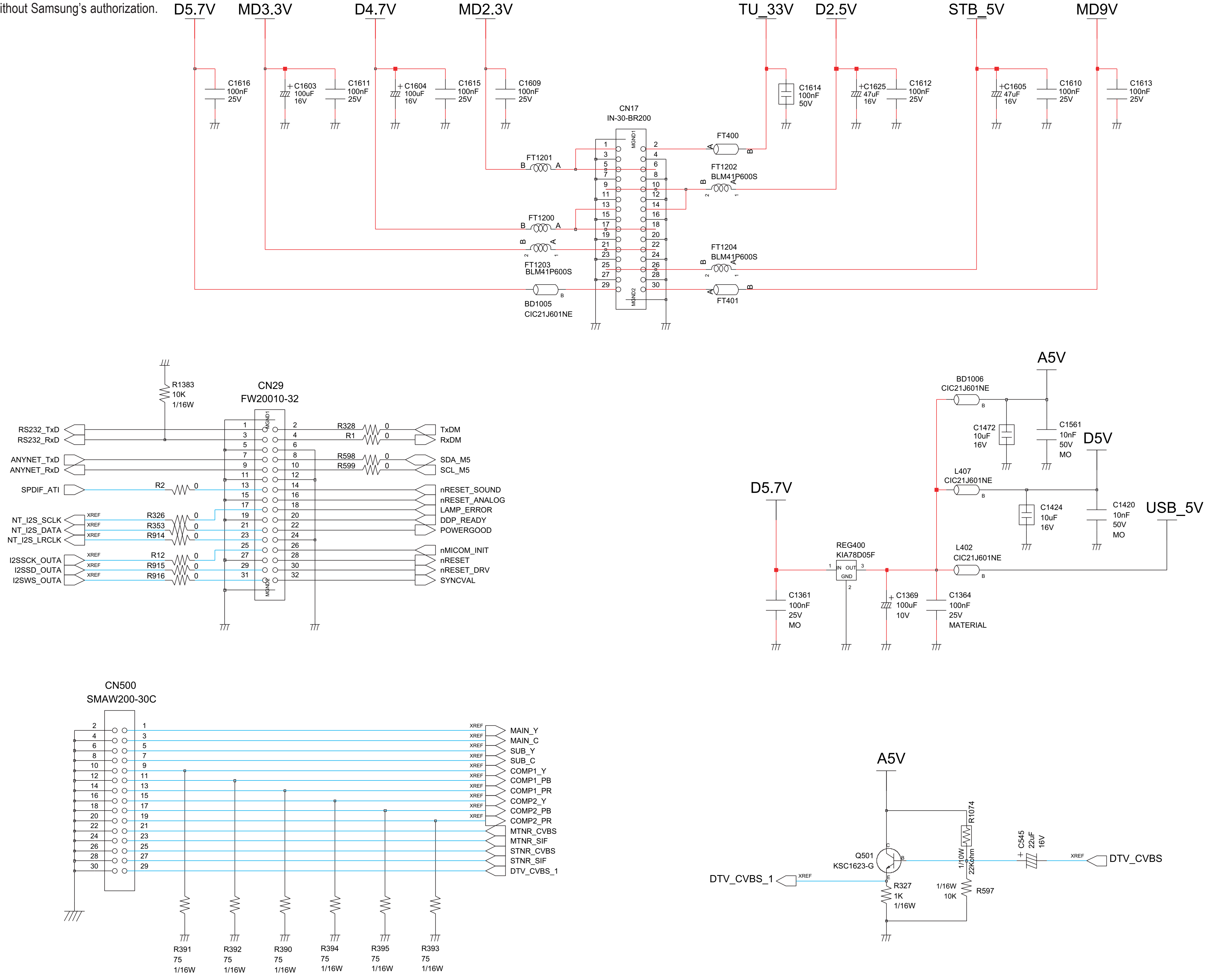
| | |
|---|---|
| — | Power |
| — | Signal |


D5.7V
MD3.3V
D4.7V
MD2.3V
TU_33V
D2.5V
STB_5V
MD9V
C1616 100nF 25V
C1603 100uF 16V
C1611 100nF 25V
C1604 100uF 16V
C1615 100nF 25V
C1609 100nF 25V
C1614 100nF 50V
C1625 47uF 16V
C1612 100nF 25V
C1605 47uF 16V
C1610 100nF 25V
C1613 100nF 25V
CN17
IN-30-BR200
FT400
FT1201
FT1202
BLM41P600S
FT1200
FT1203
BLM41P600S
FT1204
BLM41P600S
BD1005
CIC21J601NE
FT401
R1383 10K 1/16W
CN29
FW20010-32
RS232_TxD
RS232_RxD
ANYNET_TxD
ANYNET_RxD
SPDIF_ATI
R2 0
NT_I2S_SCLK
NT_I2S_DATA
NT_I2S_LRCLK
R326 0
R353 0
R914 0
I2SSCK_OUTA
I2SSD_OUTA
I2SWS_OUTA
R12 0
R915 0
R916 0
R328 0
R1 0
R598 0
R599 0
TxDM
RxDM
SDA_M5
SCL_M5
nRESET_SOUND
nRESET_ANALOG
LAMP_ERROR
DDP_READY
POWERGOOD
nMICOM_INIT
nRESET
nRESET_DRV
SYNCVAL
XREF
A5V
BD1006
CIC21J601NE
C1472 10uF 16V
C1561 10nF 50V MO
D5V
L407
CIC21J601NE
C1424 10uF 16V
C1420 10nF 50V MO
USB_5V
D5.7V
REG400
KIA78D05F
IN OUT GND
L402
CIC21J601NE
C1361 100nF 25V MO
C1369 100uF 10V
C1364 100nF 25V MATERIAL
CN500
SMAW200-30C
MAIN_Y
MAIN_C
SUB_Y
SUB_C
COMP1_Y
COMP1_PB
COMP1_PR
COMP2_Y
COMP2_PB
COMP2_PR
MTNR_CVBS
MTNR_SIF
STNR_CVBS
STNR_SIF
DTV_CVBS_1
R391 75 1/16W
R392 75 1/16W
R390 75 1/16W
R394 75 1/16W
R395 75 1/16W
R393 75 1/16W
A5V
Q501
KSC1623-G
R1074 1/10W 22Kohm
C545 22uF 16V
DTV_CVBS
DTV_CVBS_1
R327 1K 1/16W
R597 1/16W 10K

## 10-2-2 Digital-2

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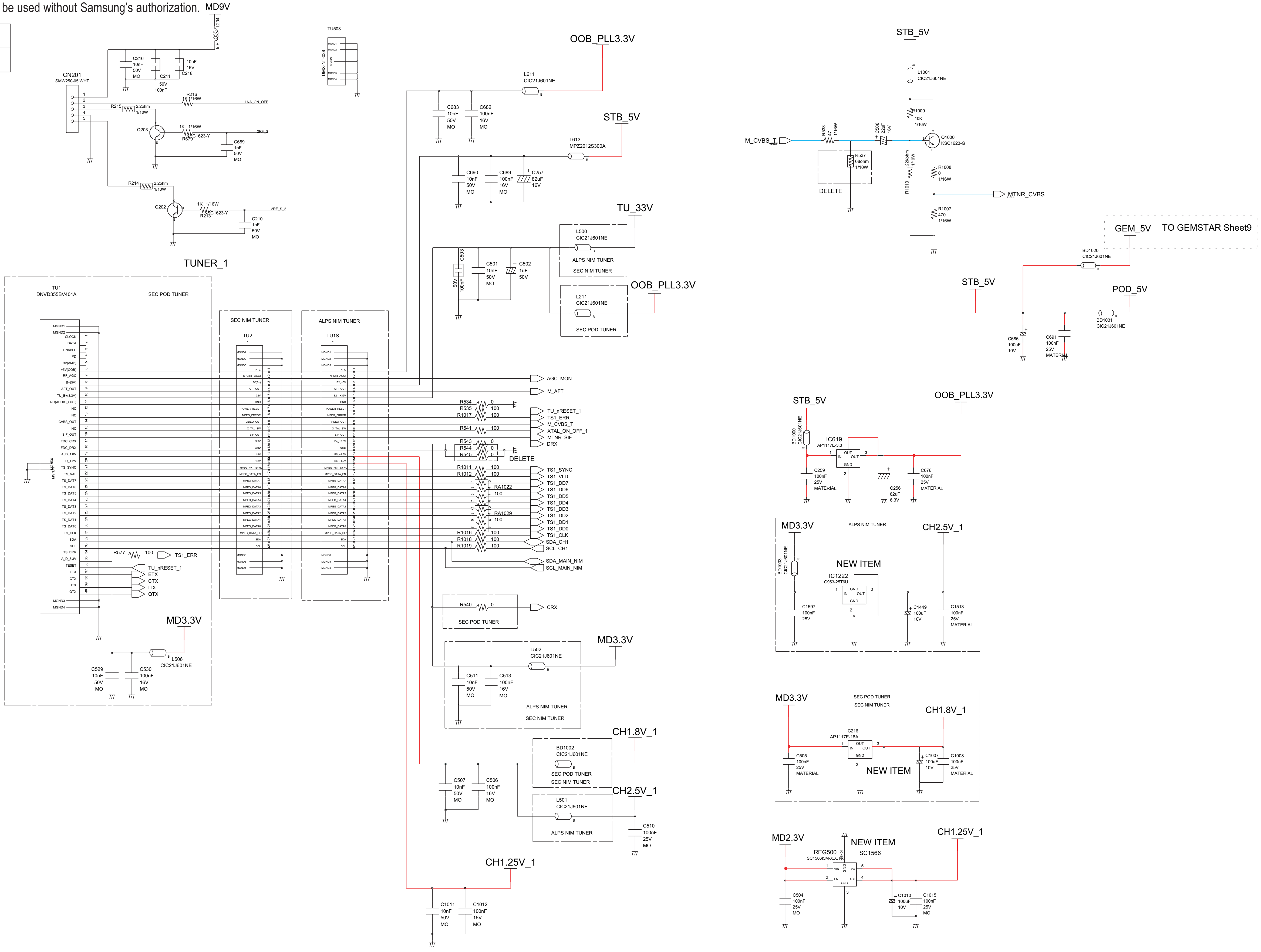
| | |
|---|---|
| 🟥 | Power |
| 🟦 | Signal |


MD9V
L204
CN201
SMW250-05 WHT
C216
10nF
50V
MO
C211
50V
100nF
10uF
16V
C218
R215 2.2ohm 1/10W
R216 1K 1/16W
LNA_ON_OFF
Q203
1K 1/16W
KSC1623-Y
R679
2RF_S
C659
1nF
50V
MO
R214 2.2ohm 1/10W
Q202
1K 1/16W
KSC1623-Y
R213
2RF_S_2
C210
1nF
50V
MO
TU503
UMX-NT-038
TUNER_1
TU1
DNVD355BV401A
SEC POD TUNER
SEC NIM TUNER
TU2
ALPS NIM TUNER
TU1S
R577 100
TS1_ERR
TU_nRESET_1
ETX
CTX
ITX
QTX
MD3.3V
L506
CIC21J601NE
C529
10nF
50V
MO
C530
100nF
16V
MO
OOB_PLL3.3V
L611
CIC21J601NE
C683
10nF
50V
MO
C682
100nF
16V
MO
STB_5V
L613
MPZ2012S300A
C690
10nF
50V
MO
C689
100nF
16V
MO
C257
82uF
16V
TU_33V
L500
CIC21J601NE
ALPS NIM TUNER
SEC NIM TUNER
C503
100nF
50V
C501
10nF
50V
MO
C502
1uF
50V
OOB_PLL3.3V
L211
CIC21J601NE
SEC POD TUNER
AGC_MON
M_AFT
R534 0
R535 100
R1017 100
TU_nRESET_1
TS1_ERR
M_CVBS_T
R541 100
XTAL_ON_OFF_1
MTNR_SIF
DRX
R543 0
R544 0
R545 0
DELETE
R1011 100
R1012 100
TS1_SYNC
TS1_VLD
TS1_DD7
TS1_DD6
RA1022 100
TS1_DD5
TS1_DD4
TS1_DD3
RA1029 100
TS1_DD2
TS1_DD1
TS1_DD0
R1016 100
R1018 100
R1019 100
TS1_CLK
SDA_CH1
SCL_CH1
SDA_MAIN_NIM
SCL_MAIN_NIM
R540 0
CRX
SEC POD TUNER
MD3.3V
L502
CIC21J601NE
C511
10nF
50V
MO
C513
100nF
16V
MO
ALPS NIM TUNER
SEC NIM TUNER
CH1.8V_1
BD1002
CIC21J601NE
SEC POD TUNER
SEC NIM TUNER
C507
10nF
50V
MO
C506
100nF
16V
MO
CH2.5V_1
L501
CIC21J601NE
ALPS NIM TUNER
C510
100nF
25V
MO
CH1.25V_1
C1011
10nF
50V
MO
C1012
100nF
16V
MO
STB_5V
L1001
CIC21J601NE
M_CVBS_T
R538 47 1/16W
C508 22uF 16V
R537 68ohm 1/10W
DELETE
R1009 10K 1/16W
Q1000
KSC1623-G
R1010 22Kohm 1/16W
R1008 0 1/16W
MTNR_CVBS
R1007 470 1/16W
GEM_5V
TO GEMSTAR Sheet9
BD1020
CIC21J601NE
STB_5V
POD_5V
C686
100uF
10V
C691
100nF
25V
MATERIAL
BD1031
CIC21J601NE
STB_5V
OOB_PLL3.3V
BD1000
CIC21J601NE
IC619
AP1117E-3.3
C259
100nF
25V
MATERIAL
C256
82uF
6.3V
C676
100nF
25V
MATERIAL
MD3.3V
ALPS NIM TUNER
CH2.5V_1
BD1003
CIC21J601NE
NEW ITEM
IC1222
G953-25T6U
C1597
100nF
25V
C1449
100uF
10V
C1513
100nF
25V
MATERIAL
MD3.3V
SEC POD TUNER
SEC NIM TUNER
CH1.8V_1
IC216
AP1117E-18A
C505
100nF
25V
MATERIAL
C1007
100uF
10V
C1008
100nF
25V
MATERIAL
NEW ITEM
MD2.3V
NEW ITEM
SC1566
REG500
SC1566ISM-X.X.TR
CH1.25V_1
C504
100nF
25V
MO
C1010
100uF
10V
C1015
100nF
25V
MO

## 10-2-3 Digital-3

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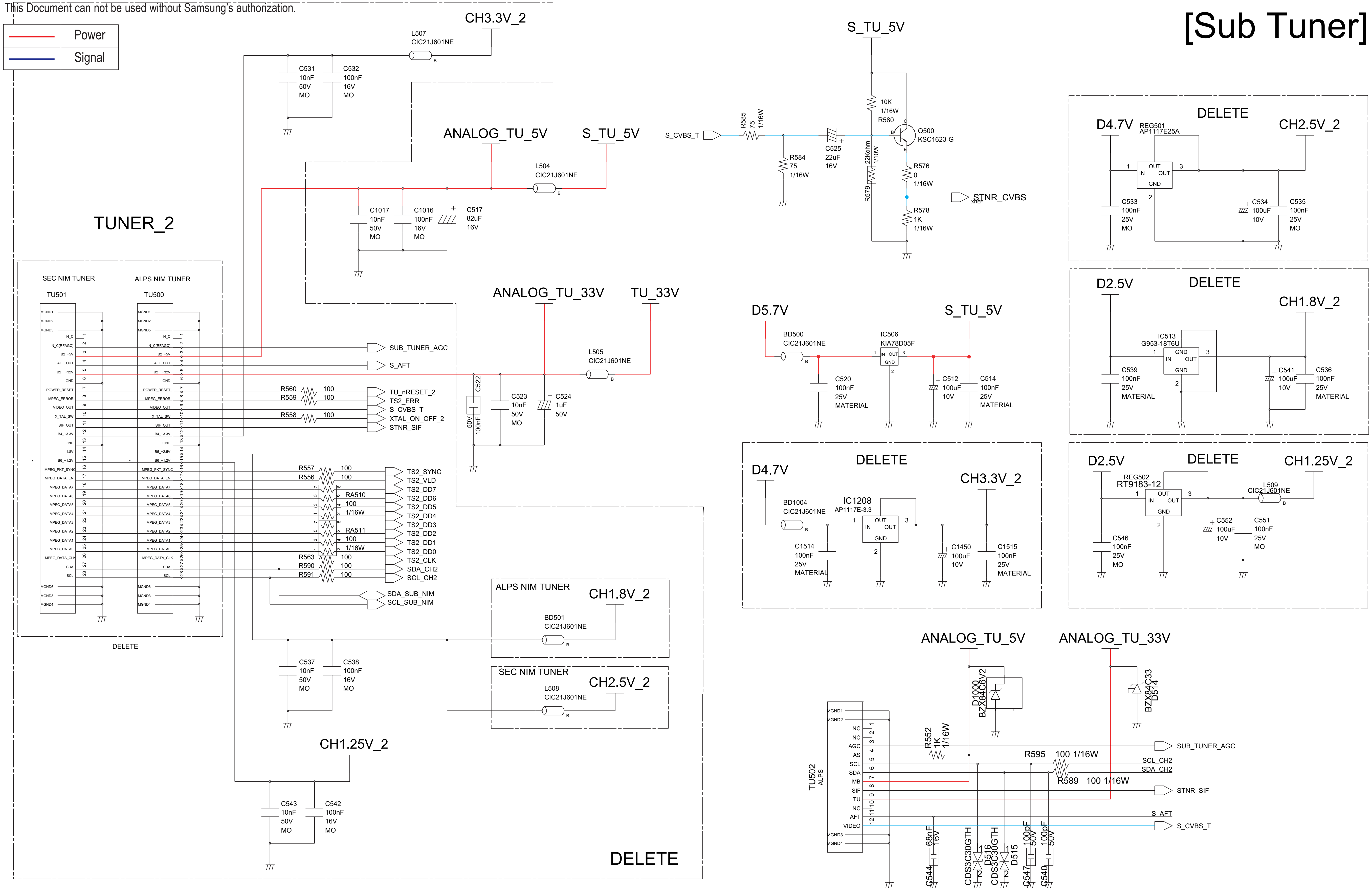
Power
Signal
[Sub Tuner]
TUNER_2
CH3.3V_2
L507
CIC21J601NE
C531 10nF 50V MO
C532 100nF 16V MO
ANALOG_TU_5V
S_TU_5V
L504
CIC21J601NE
C1017 10nF 50V MO
C1016 100nF 16V MO
C517 82uF 16V
ANALOG_TU_33V
TU_33V
L505
CIC21J601NE
C522 50V 100nF
C523 10nF 50V MO
C524 1uF 50V
SEC NIM TUNER
ALPS NIM TUNER
TU501
TU500
MGND1
MGND2
MGND5
N_C
N_C(RFAGC)
B2_+5V
AFT_OUT
B2_+32V
GND
POWER_RESET
MPEG_ERROR
VIDEO_OUT
X_TAL_SW
SIF_OUT
B4_+3.3V
1.8V
B5_+2.5V
B6_+1.2V
MPEG_PKT_SYNC
MPEG_DATA_EN
MPEG_DATA7
MPEG_DATA6
MPEG_DATA5
MPEG_DATA4
MPEG_DATA3
MPEG_DATA2
MPEG_DATA1
MPEG_DATA0
MPEG_DATA_CLK
SDA
SCL
MGND6
MGND3
MGND4
DELETE
SUB_TUNER_AGC
S_AFT
R560 100
R559 100
R558 100
TU_nRESET_2
TS2_ERR
S_CVBS_T
XTAL_ON_OFF_2
STNR_SIF
R557 100
R556 100
RA510 100 1/16W
RA511 100 1/16W
R563 100
R590 100
R591 100
TS2_SYNC
TS2_VLD
TS2_DD7
TS2_DD6
TS2_DD5
TS2_DD4
TS2_DD3
TS2_DD2
TS2_DD1
TS2_DD0
TS2_CLK
SDA_CH2
SCL_CH2
SDA_SUB_NIM
SCL_SUB_NIM
CH1.8V_2
BD501
CIC21J601NE
CH2.5V_2
L508
CIC21J601NE
C537 10nF 50V MO
C538 100nF 16V MO
CH1.25V_2
C543 10nF 50V MO
C542 100nF 16V MO
DELETE
S_TU_5V
S_CVBS_T
R585 75 1/16W
R584 75 1/16W
C525 22uF 16V
R579 22Kohm 1/10W
10K 1/16W R580
Q500 KSC1623-G
R576 0 1/16W
STNR_CVBS
R578 1K 1/16W
D4.7V
REG501 AP1117E25A
DELETE
CH2.5V_2
IN OUT OUT GND
C533 100nF 25V MO
C534 100uF 10V
C535 100nF 25V MO
D2.5V
DELETE
CH1.8V_2
IC513 G953-18T6U
C539 100nF 25V MATERIAL
C541 100uF 10V
C536 100nF 25V MATERIAL
D5.7V
S_TU_5V
BD500 CIC21J601NE
IC506 KIA78D05F
C520 100nF 25V MATERIAL
C512 100uF 10V
C514 100nF 25V MATERIAL
D4.7V
DELETE
CH3.3V_2
BD1004 CIC21J601NE
IC1208 AP1117E-3.3
C1514 100nF 25V MATERIAL
C1450 100uF 10V
C1515 100nF 25V MATERIAL
D2.5V
DELETE
CH1.25V_2
REG502 RT9183-12
L509 CIC21J601NE
C546 100nF 25V MO
C552 100uF 10V
C551 100nF 25V MO
ANALOG_TU_5V
ANALOG_TU_33V
D1000 BZX84C6V2
BZX84C33 D514
TU502 ALPS
MGND1
MGND2
NC
NC
AGC
AS
SCL
SDA
MB
SIF
TU
NC
AFT
VIDEO
MGND3
MGND4
R552 1K 1/16W
R595 100 1/16W
R589 100 1/16W
SUB_TUNER_AGC
SCL_CH2
SDA_CH2
STNR_SIF
S_AFT
S_CVBS_T
C544 68nF 16V
CDS3C30GTH D516
CDS3C30GTH D515
C547 100pF 50V
C540 100pF 50V

## 10-2-4 Digital-4

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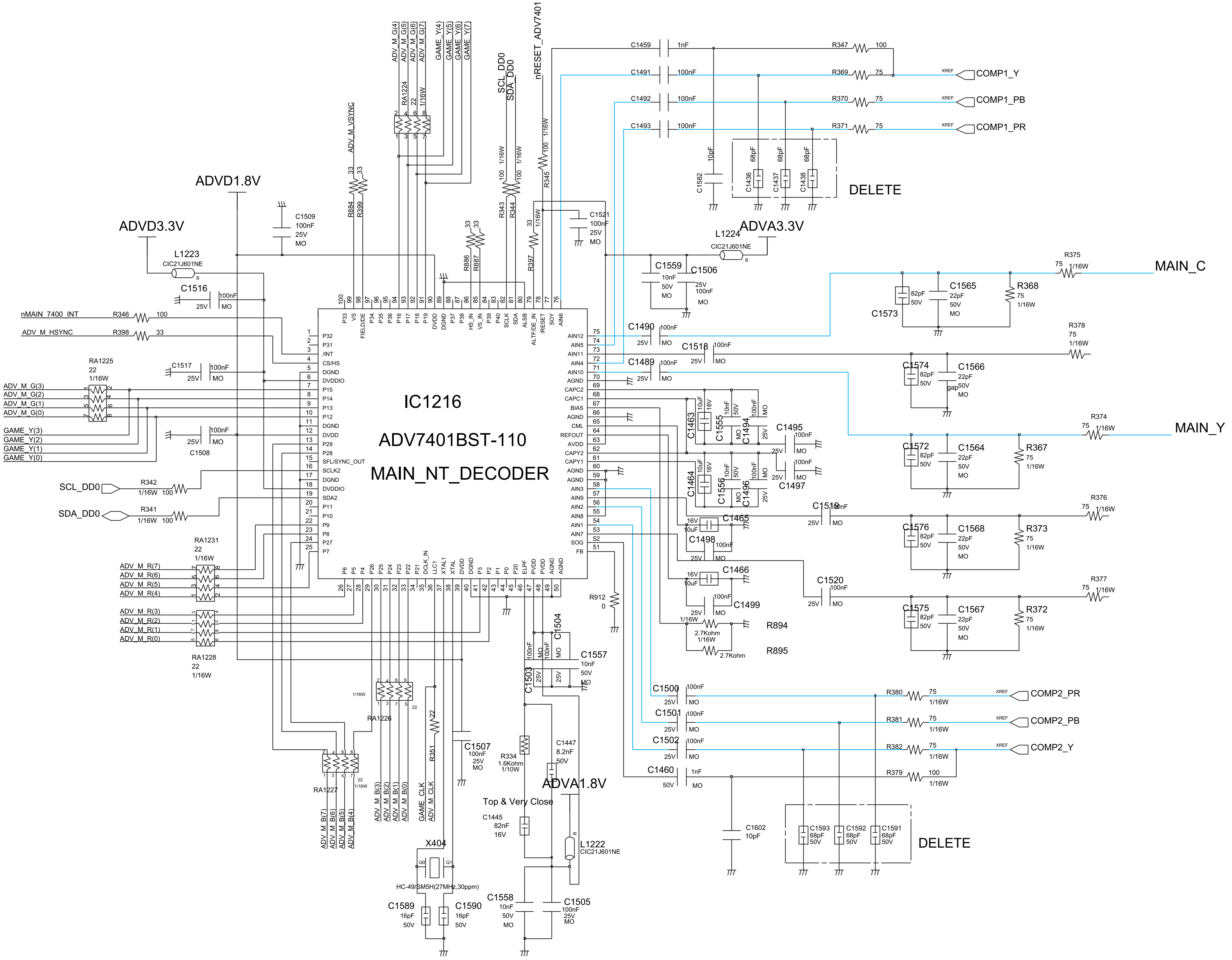
| | |
|---|---|
| — | Power |
| — | Signal |


IC1216
ADV7401BST-110
MAIN_NT_DECODER
ADVD1.8V
ADVD3.3V
ADVA3.3V
ADVA1.8V
L1223
CIC21J601NE
L1224
CIC21J601NE
L1222
CIC21J601NE
nMAIN_7400_INT
ADV_M_HSYNC
ADV_M_VSYNC
ADV_M_G(3)
ADV_M_G(2)
ADV_M_G(1)
ADV_M_G(0)
ADV_M_G(4)
ADV_M_G(5)
ADV_M_G(6)
ADV_M_G(7)
GAME_Y(3)
GAME_Y(2)
GAME_Y(1)
GAME_Y(0)
GAME_Y(4)
GAME_Y(5)
GAME_Y(6)
GAME_Y(7)
SCL_DD0
SDA_DD0
nRESET_ADV7401
ADV_M_R(7)
ADV_M_R(6)
ADV_M_R(5)
ADV_M_R(4)
ADV_M_R(3)
ADV_M_R(2)
ADV_M_R(1)
ADV_M_R(0)
ADV_M_B(7)
ADV_M_B(6)
ADV_M_B(5)
ADV_M_B(4)
ADV_M_B(3)
ADV_M_B(2)
ADV_M_B(1)
ADV_M_B(0)
GAME_CLK
ADV_M_CLK
RA1224
RA1225
RA1226
RA1227
RA1228
RA1231
X404
HC-49/SM5H(27MHz,30ppm)
Top & Very Close
COMP1_Y
COMP1_PB
COMP1_PR
COMP2_PR
COMP2_PB
COMP2_Y
MAIN_C
MAIN_Y
DELETE
DELETE
XREF
R347 100
R369 75
R370 75
R371 75
R375 75 1/16W
R378 75 1/16W
R374 75 1/16W
R376 75 1/16W
R377 75 1/16W
R368 75 1/16W
R367 75 1/16W
R373 75 1/16W
R372 75 1/16W
R380 75 1/16W
R381 75 1/16W
R382 75 1/16W
R379 100 1/16W
R894 2.7Kohm 1/16W
R895 2.7Kohm
R912 0
R334 1.6Kohm 1/10W
R346 100
R398 33
R342 1/16W 100
R341 1/16W 100
R884 33
R399 33
R886 33
R887 33
R343 100 1/16W
R344 100 1/16W
R345 100 1/16W
R397 33 1/16W
R351 22
C1459 1nF
C1491 100nF
C1492 100nF
C1493 100nF
C1582 10pF
C1436 68pF
C1437 68pF
C1438 68pF
C1509 100nF 25V MO
C1521 100nF 25V MO
C1516 100nF 25V MO
C1517 100nF 25V MO
C1508 100nF 25V MO
C1559 10nF 50V MO
C1506 25V 100nF MO
C1490 100nF 25V MO
C1518 100nF 25V MO
C1489 100nF 25V MO
C1573 82pF 50V
C1565 22pF 50V MO
C1574 82pF 50V
C1566 22pF 50V MO
C1572 82pF 50V
C1564 22pF 50V MO
C1576 82pF 50V
C1568 22pF 50V MO
C1575 82pF 50V
C1567 22pF 50V MO
C1463 10uF 16V
C1555 10nF 50V MO
C1494 100nF 25V MO
C1495 100nF 25V MO
C1464 10uF 16V
C1556 10nF 50V MO
C1496 100nF 25V MO
C1497 100nF 25V MO
C1519 100nF 25V MO
C1465 16V 10uF
C1498 100nF 25V MO
C1466 16V 10uF
C1499 100nF 25V MO
C1520 100nF 25V MO
C1503 100nF 25V MO
C1504 100nF 25V MO
C1557 10nF 50V MO
C1500 100nF 25V MO
C1501 100nF 25V MO
C1502 100nF 25V MO
C1460 1nF 50V MO
C1602 10pF
C1593 68pF 50V
C1592 68pF 50V
C1591 68pF 50V
C1507 100nF 25V MO
C1447 8.2nF 50V
C1445 82nF 16V
C1558 10nF 50V MO
C1505 100nF 25V MO
C1589 16pF 50V
C1590 16pF 50V

## 10-2-5 Digital-5

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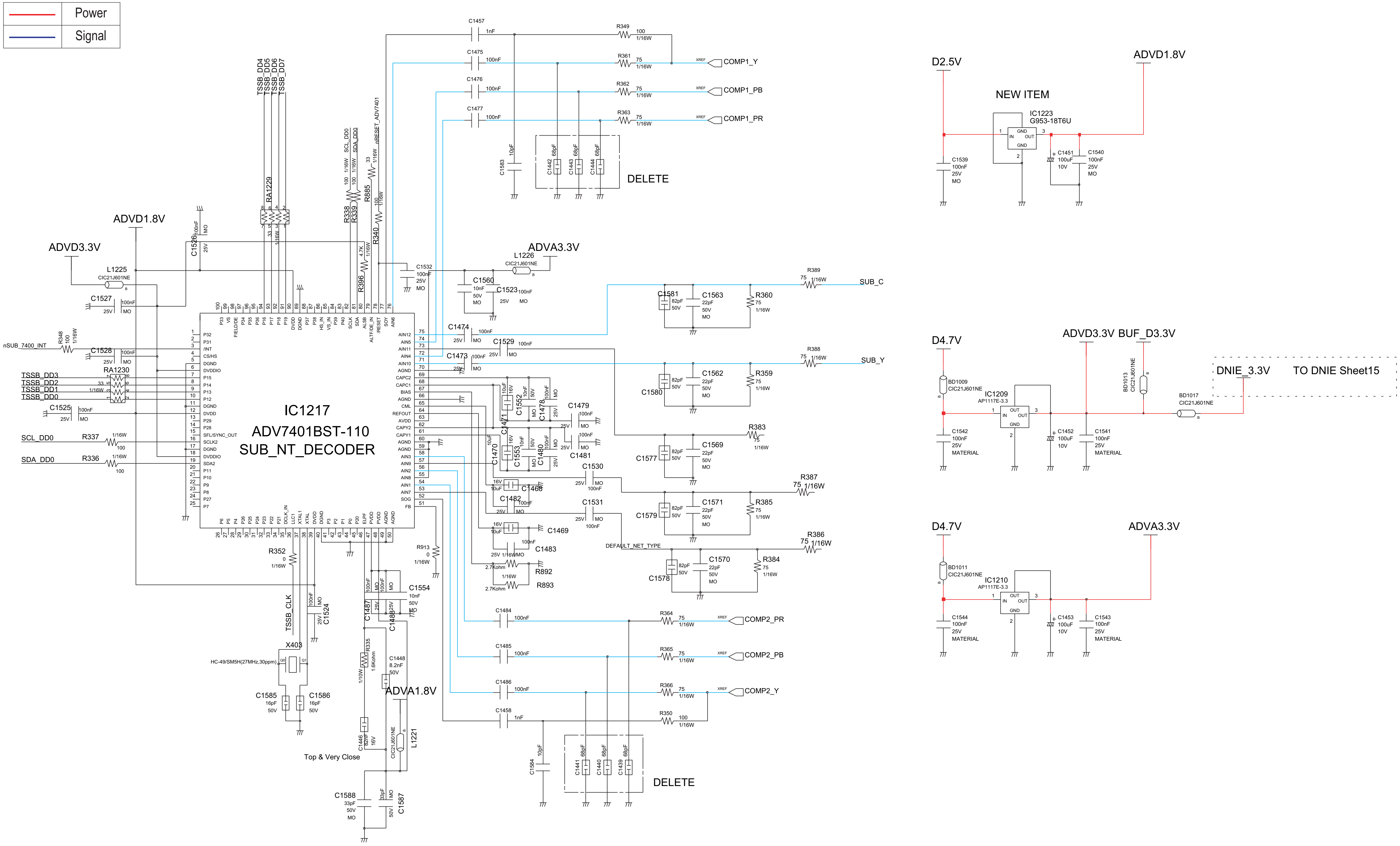
Power
Signal
IC1217
ADV7401BST-110
SUB_NT_DECODER
ADVD1.8V
ADVD3.3V
ADVA3.3V
ADVA1.8V
L1225
L1226
L1221
RA1229
RA1230
TSSB_DD4
TSSB_DD5
TSSB_DD6
TSSB_DD7
TSSB_DD3
TSSB_DD2
TSSB_DD1
TSSB_DD0
TSSB_CLK
nSUB_7400_INT
SCL_DD0
SDA_DD0
nRESET_ADV7401
X403
HC-49/SM5H(27MHz,30ppm)
Top & Very Close
COMP1_Y
COMP1_PB
COMP1_PR
COMP2_PR
COMP2_PB
COMP2_Y
SUB_C
SUB_Y
DELETE
DEFAULT_NET_TYPE
D2.5V
NEW ITEM
IC1223
G953-18T6U
D4.7V
ADVD3.3V BUF_D3.3V
DNIE_3.3V
TO DNIE Sheet15
IC1209
AP1117E-3.3
IC1210
AP1117E-3.3
BD1009
BD1011
BD1013
BD1017
CIC21J601NE

## 10-2-6 Digital-6

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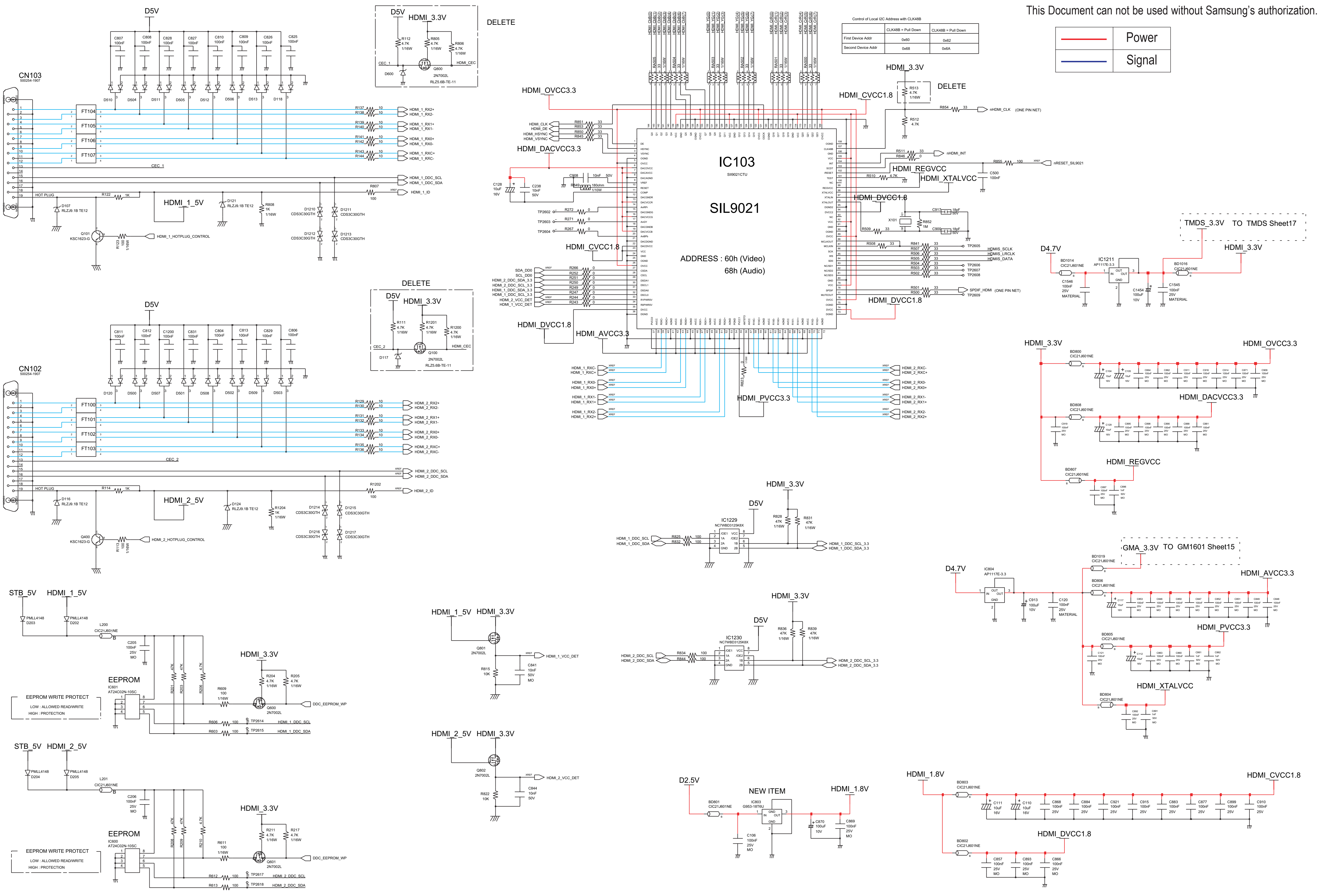
Power
Signal
IC103
SIL9021CTU
SIL9021
ADDRESS : 60h (Video)
68h (Audio)
CN103
CN102
FT104
FT105
FT106
FT107
FT100
FT101
FT102
FT103
D5V
HDMI_3.3V
DELETE
HDMI_1_5V
HDMI_2_5V
HDMI_OVCC3.3
HDMI_DACVCC3.3
HDMI_CVCC1.8
HDMI_DVCC1.8
HDMI_AVCC3.3
HDMI_REGVCC
HDMI_XTALVCC
HDMI_PVCC3.3
HDMI_1.8V
D4.7V
D2.5V
TMDS_3.3V TO TMDS Sheet17
GMA_3.3V TO GM1601 Sheet15
STB_5V
EEPROM
EEPROM WRITE PROTECT
LOW : ALLOWED READ/WRITE
HIGH : PROTECTION
NEW ITEM
IC1229
IC1230
IC1211
IC804
IC803
IC601
IC600
Control of Local I2C Address with CLK48B
CLK48B = Pull Down
CLK48B = Pull Down
First Device Addr
0x60
0x62
Second Device Addr
0x68
0x6A
HDMI_1_HOTPLUG_CONTROL
HDMI_2_HOTPLUG_CONTROL
DDC_EEPROM_WP
HOT PLUG
CEC_1
CEC_2

## 10-2-7 Digital-7

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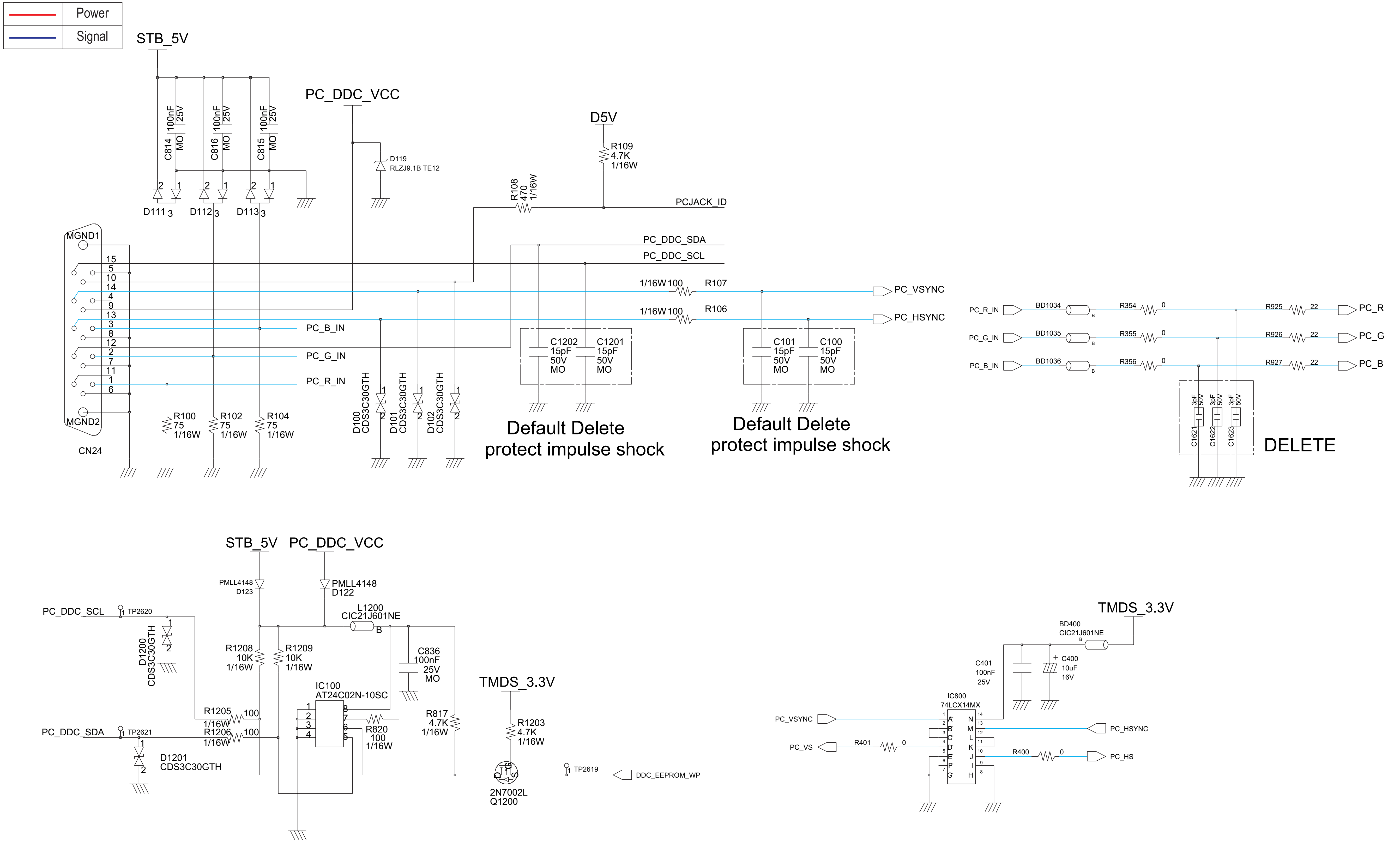
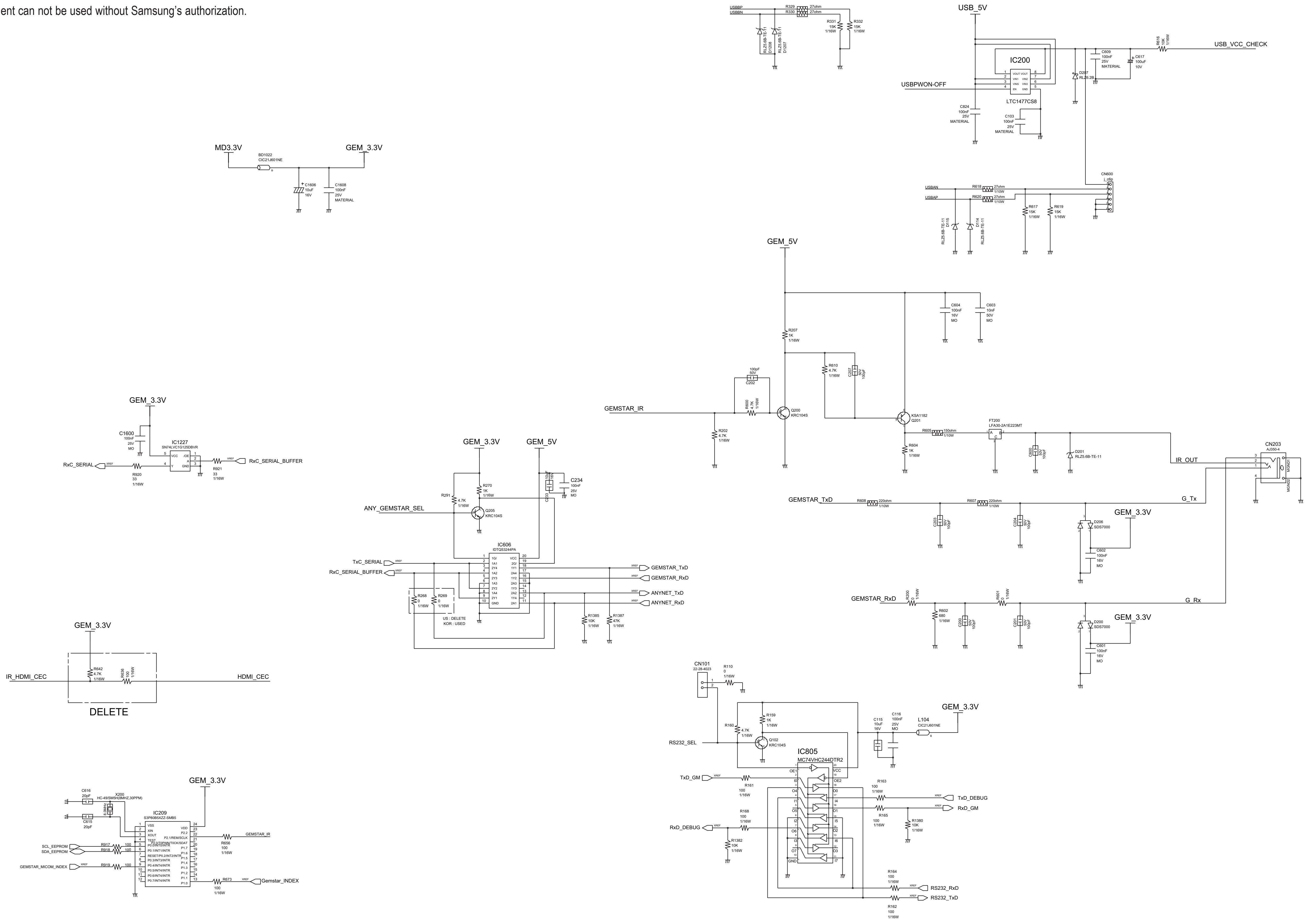

Power
Signal
STB_5V
PC_DDC_VCC
D5V
C814 100nF 25V MO
C816 100nF 25V MO
C815 100nF 25V MO
D111
D112
D113
D119 RLZJ9.1B TE12
R109 4.7K 1/16W
R108 470 1/16W
PCJACK_ID
PC_DDC_SDA
PC_DDC_SCL
1/16W 100 R107
1/16W 100 R106
PC_VSYNC
PC_HSYNC
MGND1
MGND2
CN24
PC_B_IN
PC_G_IN
PC_R_IN
R100 75 1/16W
R102 75 1/16W
R104 75 1/16W
D100 CDS3C30GTH
D101 CDS3C30GTH
D102 CDS3C30GTH
C1202 15pF 50V MO
C1201 15pF 50V MO
C101 15pF 50V MO
C100 15pF 50V MO
Default Delete
protect impulse shock
Default Delete
protect impulse shock
BD1034
BD1035
BD1036
R354 0
R355 0
R356 0
R925 22
R926 22
R927 22
PC_R
PC_G
PC_B
C1621 3pF 50V
C1622 3pF 50V
C1623 3pF 50V
DELETE
STB_5V
PC_DDC_VCC
PMLL4148 D123
PMLL4148 D122
L1200 CIC21J601NE
PC_DDC_SCL
TP2620
D1200 CDS3C30GTH
R1208 10K 1/16W
R1209 10K 1/16W
C836 100nF 25V MO
IC100 AT24C02N-10SC
R1205 1/16W 100
R1206 1/16W 100
R820 100 1/16W
R817 4.7K 1/16W
PC_DDC_SDA
TP2621
D1201 CDS3C30GTH
TMDS_3.3V
R1203 4.7K 1/16W
2N7002L Q1200
TP2619
DDC_EEPROM_WP
TMDS_3.3V
BD400 CIC21J601NE
C401 100nF 25V
C400 10uF 16V
IC800 74LCX14MX
PC_VSYNC
PC_VS
R401 0
PC_HSYNC
R400 0
PC_HS

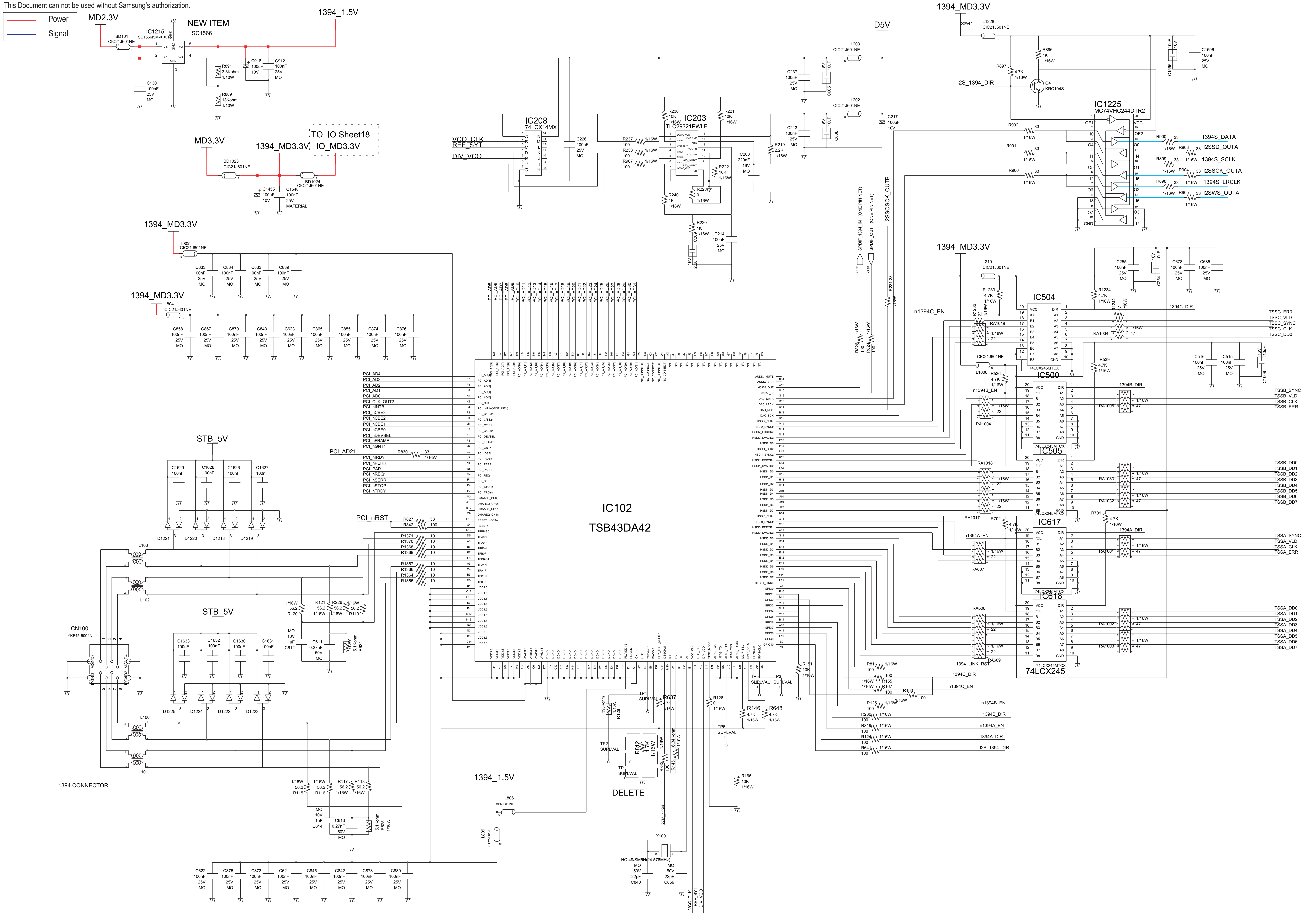
## 10-2-8 Digital-8

This Document can not be used without Samsung's authorization.


USBBP
USBBN
R329 27ohm
R330 27ohm
R331 15K 1/16W
R332 15K 1/16W
USB_5V
IC200
LTC1477CS8
USBPWON-OFF
USB_VCC_CHECK
C609 100nF 25V MATERIAL
C617 100uF 10V
D207 RLZ6.2B
C824 100nF 25V MATERIAL
C103 100nF 25V MATERIAL
CN600
USBAN
USBAP
R618 27ohm 1/10W
R620 27ohm 1/10W
R617 15K 1/16W
R619 15K 1/16W
D115
D114
MD3.3V
GEM_3.3V
BD1022 CIC21J601NE
C1606 10uF 16V
C1608 100nF 25V MATERIAL
GEM_5V
C604 100nF 16V MO
C603 10nF 50V MO
R207 1K 1/16W
R610 4.7K 1/16W
C207
C202 100pF 50V
R600 4.7K 1/16W
GEMSTAR_IR
Q200 KRC104S
R202 4.7K 1/16W
KSA1182 Q201
R605 150ohm 1/10W
FT200 LFA30-2A1E223MT
R604 1K 1/16W
C600
D201 RLZ5.6B-TE-11
IR_OUT
CN203 AJ350-4
GEMSTAR_TxD
R608 220ohm 1/10W
R607 220ohm 1/10W
C203
C204
D206 SDS7000
C602 100nF 16V MO
G_Tx
GEMSTAR_RxD
R200
R602 680 1/16W
R601
C205
C201
D200 SDS7000
C601 100nF 16V MO
G_Rx
C1600 100nF 25V MO
IC1227 SN74LVC1G125DBVR
RxC_SERIAL
R920 33 1/16W
R921 33 1/16W
RxC_SERIAL_BUFFER
GEM_5V
C234 100nF 25V MO
C233
R291 4.7K 1/16W
R270 1K 1/16W
ANY_GEMSTAR_SEL
Q205 KRC104S
IC606 IDTQS3244PA
TxC_SERIAL
RxC_SERIAL_BUFFER
GEMSTAR_TxD
GEMSTAR_RxD
ANYNET_TxD
ANYNET_RxD
R268 0 1/16W
R269 0 1/16W
US : DELETE
KOR : USED
R1385 10K 1/16W
R1387 47K 1/16W
IR_HDMI_CEC
R642 4.7K 1/16W
R636 100 1/16W
HDMI_CEC
DELETE
C616 20pF
C615 20pF
X200 HC-49/SMSH(8MHZ,30PPM)
IC209 S3P80B5XZZ-SMB5
SCL_EEPROM
SDA_EEPROM
R917 100
R918 100
GEMSTAR_MICOM_INDEX
R919 100
R656 100 1/16W
GEMSTAR_IR
R673 100 1/16W
Gemstar_INDEX
CN101 22-28-4023
R110 0 1/16W
R159 1K 1/16W
R160 4.7K 1/16W
RS232_SEL
Q102 KRC104S
C115 10uF 16V
C116 100nF 25V MO
L104 CIC21J601NE
IC805 MC74VHC244DTR2
TxD_GM
R161 100 1/16W
R168 100 1/16W
RxD_DEBUG
R1382 10K 1/16W
R163 100 1/16W
R165 100 1/16W
R1380 10K 1/16W
TxD_DEBUG
RxD_GM
R164 100 1/16W
R162 100 1/16W
RS232_RxD
RS232_TxD

## 10-2-9 Digital-9

This Document can not be used without Samsung's authorization.


Power
Signal
MD2.3V
IC1215
SC1566I5M-X.X.TR
NEW ITEM
SC1566
1394_1.5V
MD3.3V
1394_MD3.3V
TO IO Sheet18
IO_MD3.3V
IC208
74LCX14MX
VCO_CLK
REF_SYT
DIV_VCO
IC203
TLC29321PWLE
D5V
IC1225
MC74VHC244DTR2
I2S_1394_DIR
1394S_DATA
I2SSD_OUTA
1394S_SCLK
I2SSCK_OUTA
1394S_LRCLK
I2SWS_OUTA
SPDIF_1394_IN (ONE PIN NET)
SPDIF_OUT (ONE PIN NET)
I2SSOSCK_OUTB
n1394C_EN
1394C_DIR
IC504
74LCX245MTCX
TSSC_ERR
TSSC_VLD
TSSC_SYNC
TSSC_CLK
TSSC_DD0
IC500
n1394B_EN
1394B_DIR
TSSB_SYNC
TSSB_VLD
TSSB_CLK
TSSB_ERR
IC505
TSSB_DD0
TSSB_DD1
TSSB_DD2
TSSB_DD3
TSSB_DD4
TSSB_DD5
TSSB_DD6
TSSB_DD7
IC617
n1394A_EN
1394A_DIR
TSSA_SYNC
TSSA_VLD
TSSA_CLK
TSSA_ERR
IC618
TSSA_DD0
TSSA_DD1
TSSA_DD2
TSSA_DD3
TSSA_DD4
TSSA_DD5
TSSA_DD6
TSSA_DD7
74LCX245
IC102
TSB43DA42
PCI_AD21
PCI_nRST
STB_5V
CN100
YKF45-5004N
1394 CONNECTOR
1394_LINK_RST
1394C_DIR
n1394C_EN
n1394B_EN
1394B_DIR
n1394A_EN
1394A_DIR
I2S_1394_DIR
DELETE
X100
HC-49/SM5H(24.576MHz)
VCO_CLK
REF_SYT
DIV_VCO

## 10-2-10 Digital-10

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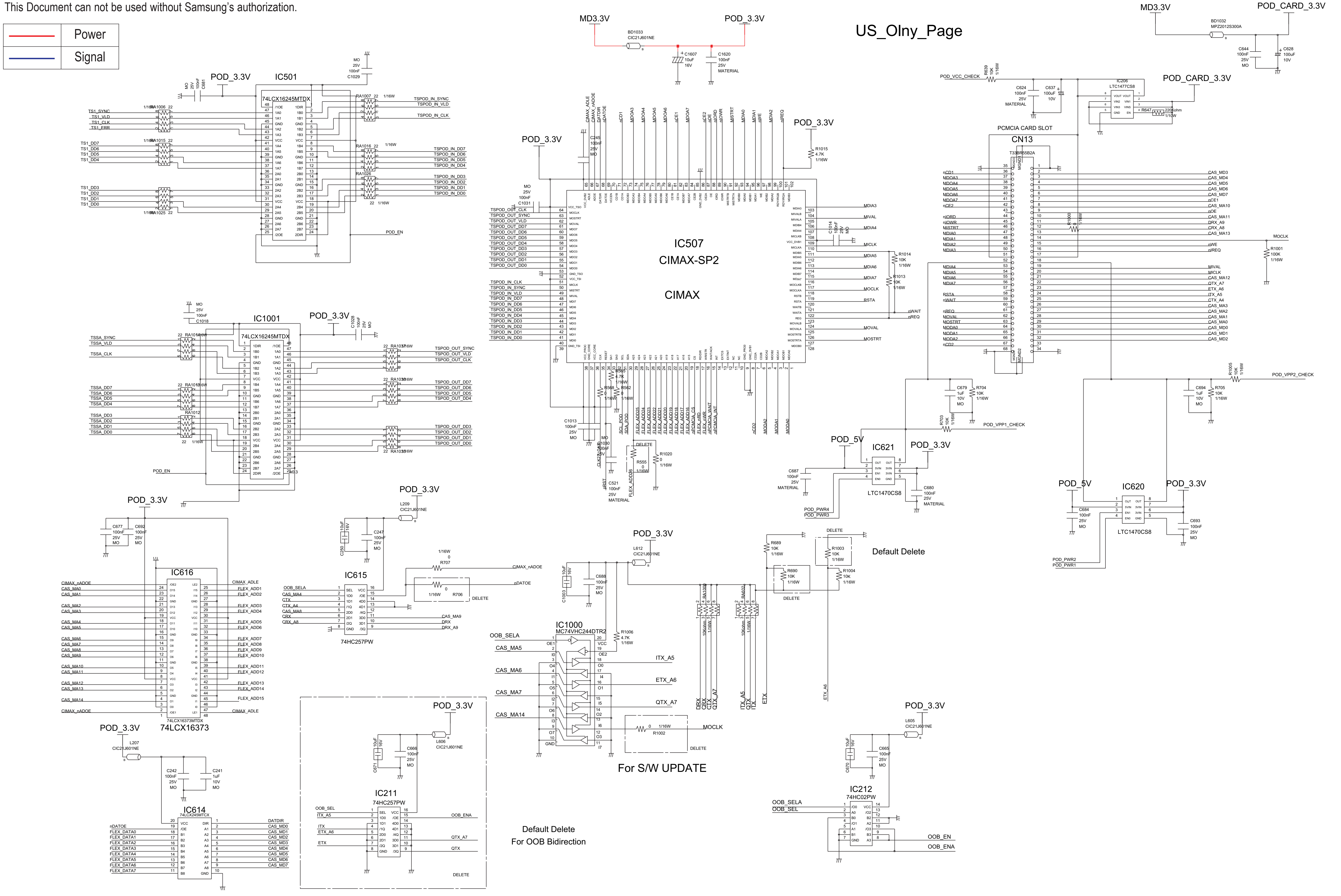
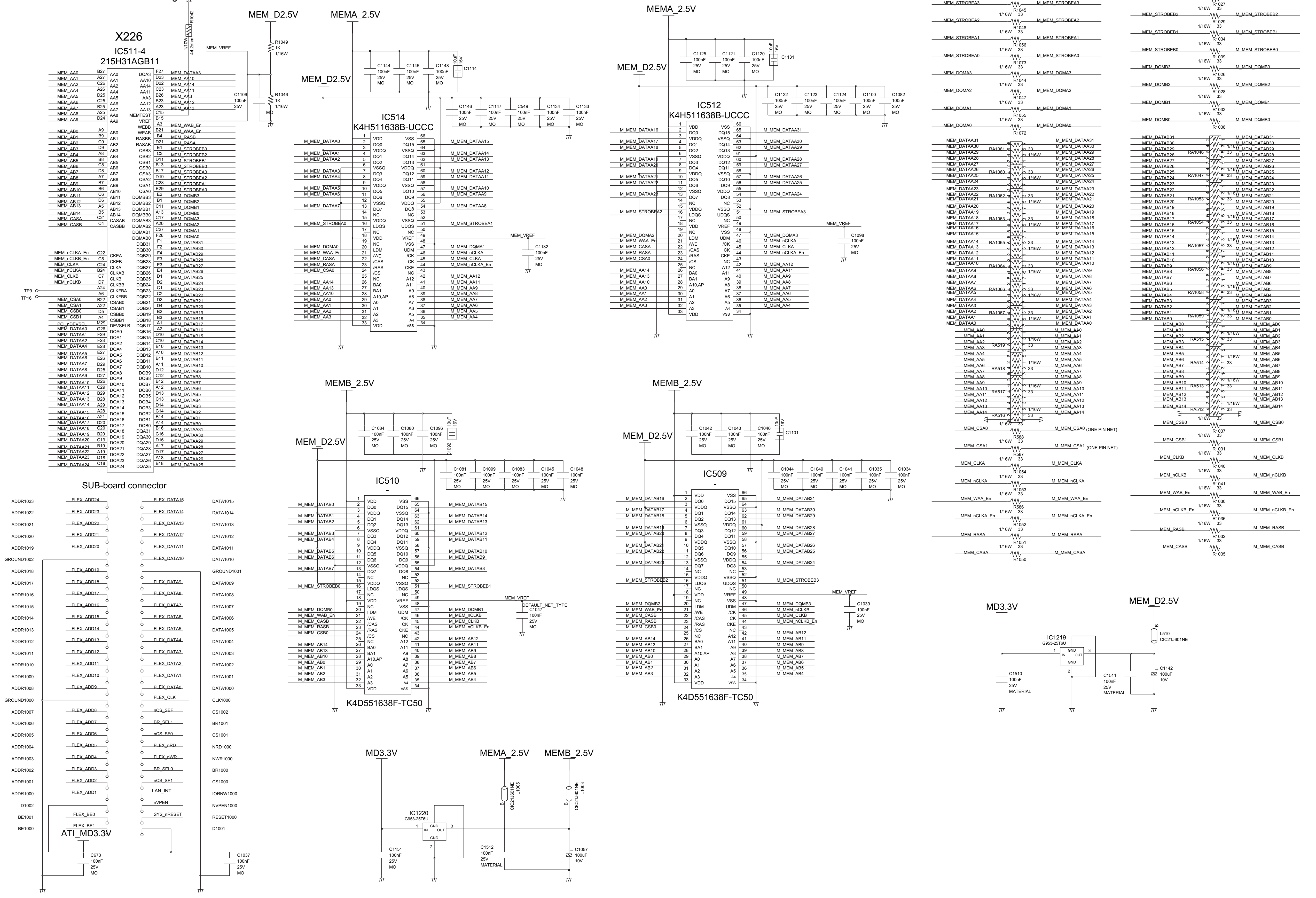

Power
Signal
US_Olny_Page
MD3.3V
POD_3.3V
POD_CARD_3.3V
POD_5V
IC501
74LCX16245MTDX
IC1001
74LCX16245MTDX
IC507
CIMAX-SP2
CIMAX
PCMCIA CARD SLOT
CN13
IC206
LTC1477CS8
IC621
LTC1470CS8
IC620
LTC1470CS8
IC616
74LCX16373
IC615
74HC257PW
IC1000
MC74VHC244DTR2
For S/W UPDATE
IC614
74LCX245MTCX
IC211
74HC257PW
IC212
74HC02PW
Default Delete
Default Delete
For OOB Bidirection
DELETE
TS1_SYNC
TS1_VLD
TS1_CLK
TS1_ERR
TSPOD_IN_SYNC
TSPOD_IN_VLD
TSPOD_IN_CLK
TSSA_SYNC
TSSA_VLD
TSSA_CLK
TSPOD_OUT_SYNC
TSPOD_OUT_VLD
TSPOD_OUT_CLK
POD_EN
POD_VCC_CHECK
POD_VPP1_CHECK
POD_VPP2_CHECK
POD_PWR1
POD_PWR2
POD_PWR3
POD_PWR4
MOCLK
OOB_SELA
OOB_SEL
OOB_EN
OOB_ENA
CIMAX_nADOE
CIMAX_ADLE
nDATOE
ITX_A5
ETX_A6
QTX_A7
CAS_MA5
CAS_MA6
CAS_MA7
CAS_MA14

## 10-2-11 Digital-11

This Document can not be used without Samsung's authorization.


X226
IC511-4
215H31AGB11
MEM_VREF
R1042
MEM_D2.5V
MEMA_2.5V
R1049
1K
1/16W
R1046
1K
1/16W
C1106
100nF
25V
IC514
K4H511638B-UCCC
C1144
C1145
C1148
C1114
C1146
C1147
C549
C1134
C1133
C1132
MEMA_2.5V
MEM_D2.5V
IC512
K4H511638B-UCCC
C1125
C1121
C1120
C1131
C1122
C1123
C1124
C1100
C1082
C1098
MEMB_2.5V
MEM_D2.5V
IC510
K4D551638F-TC50
C1084
C1080
C1096
C1092
C1081
C1099
C1083
C1045
C1048
C1047
DEFAULT_NET_TYPE
MEMB_2.5V
MEM_D2.5V
IC509
K4D551638F-TC50
C1042
C1043
C1046
C1101
C1044
C1049
C1041
C1035
C1034
C1039
SUB-board connector
ATI_MD3.3V
C673
C1037
TP9
TP16
MD3.3V
MEMA_2.5V
MEMB_2.5V
IC1220
G953-25T6U
C1151
C1512
C1057
L1005
L1003
CIC21J601NE
MD3.3V
MEM_D2.5V
IC1219
G953-25T6U
C1510
C1511
C1142
L510
CIC21J601NE
(ONE PIN NET)

## 10-2-12 Digital-12

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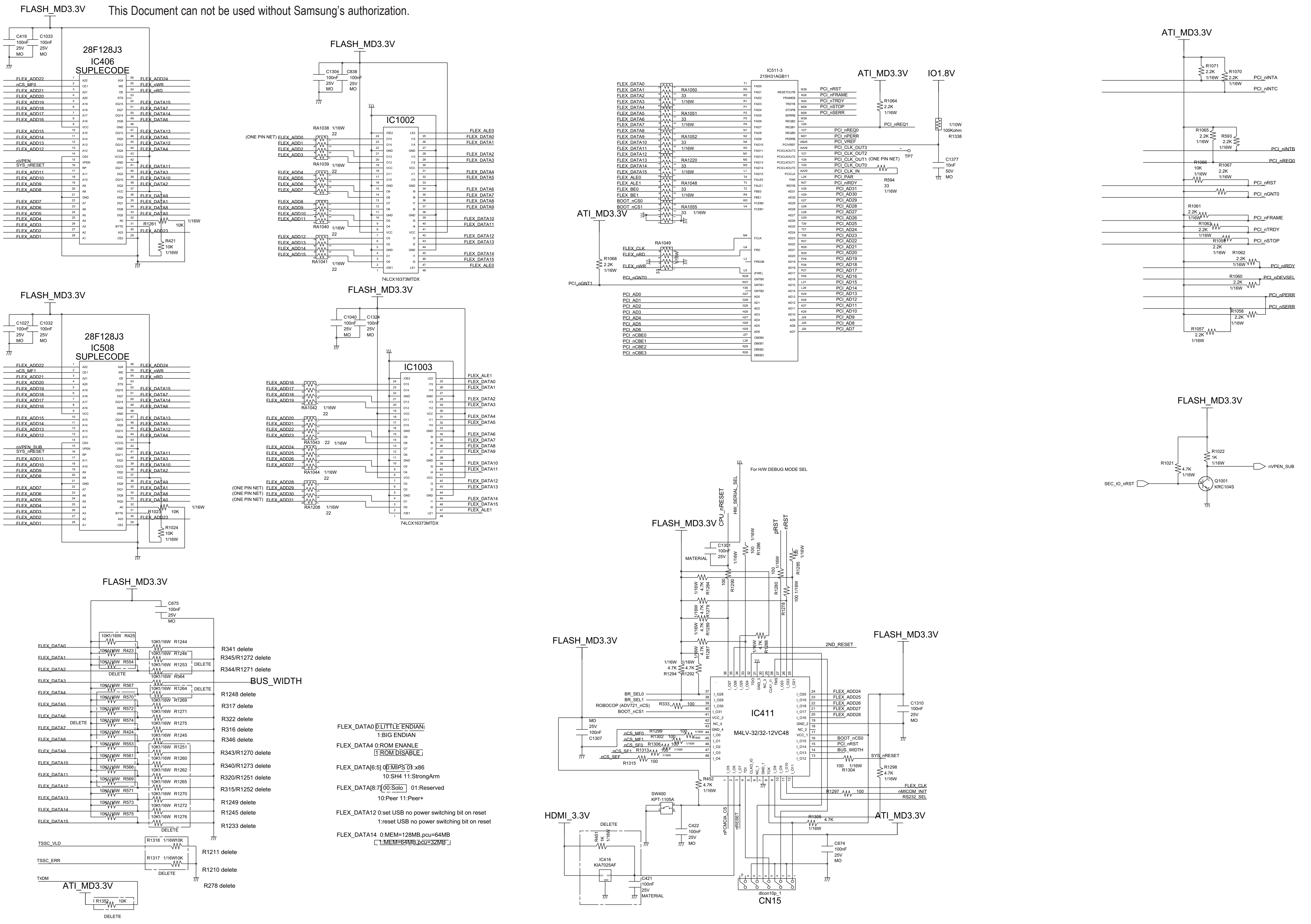

FLASH_MD3.3V
28F128J3
IC406
SUPLECODE
IC508
SUPLECODE
IC1002
IC1003
74LCX16373MTDX
IC511-3
215H31AGB11
ATI_MD3.3V
IO1.8V
IC411
M4LV-32/32-12VC48
SW400
KPT-1105A
IC416
KIA7025AF
HDMI_3.3V
CN15
dlcon10p_1
Q1001
KRC104S
SEC_IO_nRST
nVPEN_SUB
BUS_WIDTH
For H/W DEBUG MODE SEL
2ND_RESET
R341 delete
R345/R1272 delete
R344/R1271 delete
R1248 delete
R317 delete
R322 delete
R316 delete
R346 delete
R343/R1270 delete
R340/R1273 delete
R320/R1251 delete
R315/R1252 delete
R1249 delete
R1245 delete
R1233 delete
R1211 delete
R1210 delete
R278 delete
DELETE

FLEX_DATA0 0:LITTLE ENDIAN
1:BIG ENDIAN

FLEX_DATA4 0:ROM ENANLE
1:ROM DISABLE

FLEX_DATA[6:5] 00:MIPS 01:x86
10:SH4 11:StrongArm

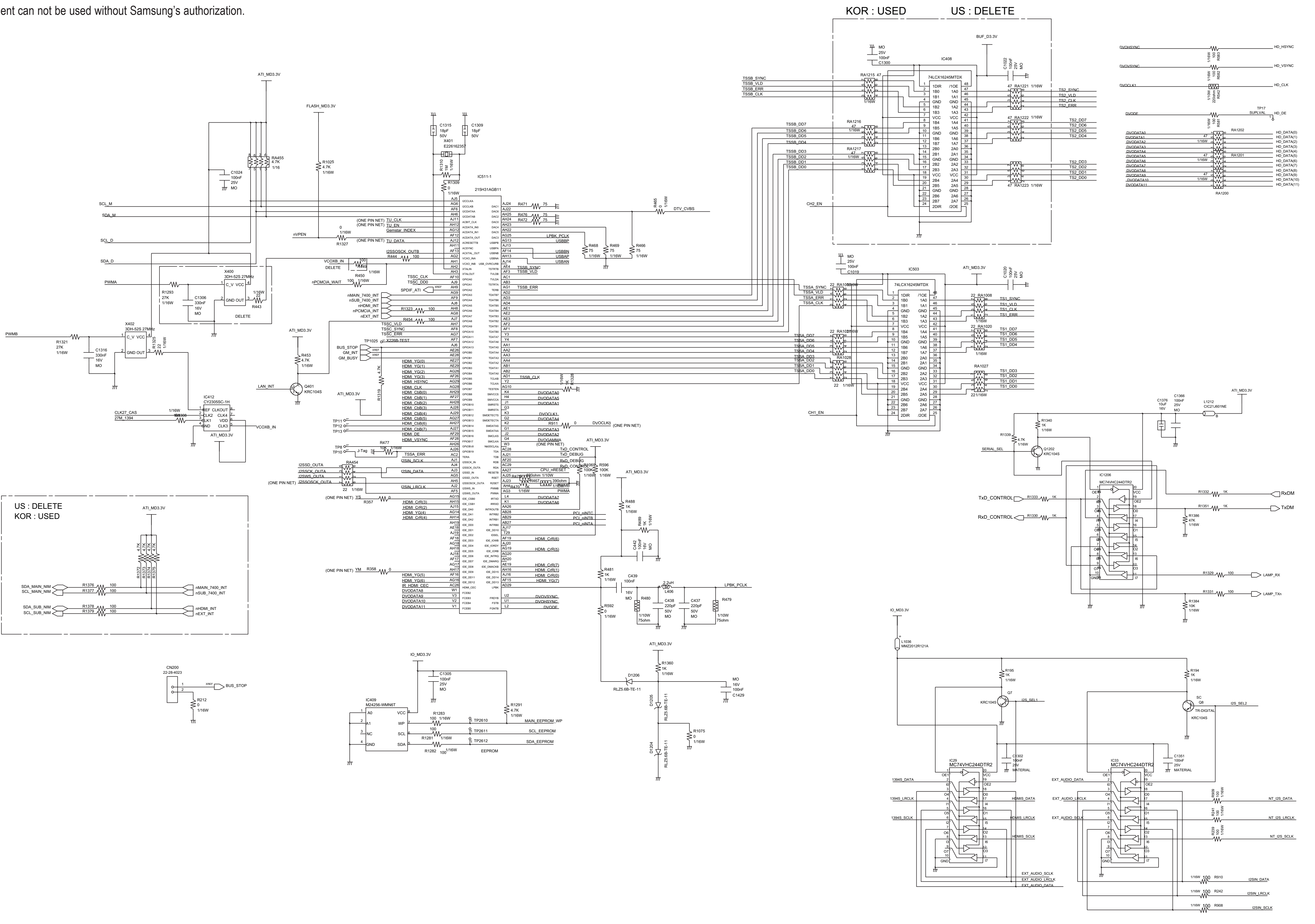
FLEX_DATA[8:7] 00:Solo 01:Reserved
10:Peer 11:Peer+

FLEX_DATA12 0:set USB no power switching bit on reset
1:reset USB no power switching bit on reset

FLEX_DATA14 0:MEM=128MB,pcu=64MB
1:MEM=64MB,pcu=32MB

## 10-2-13 Digital-13

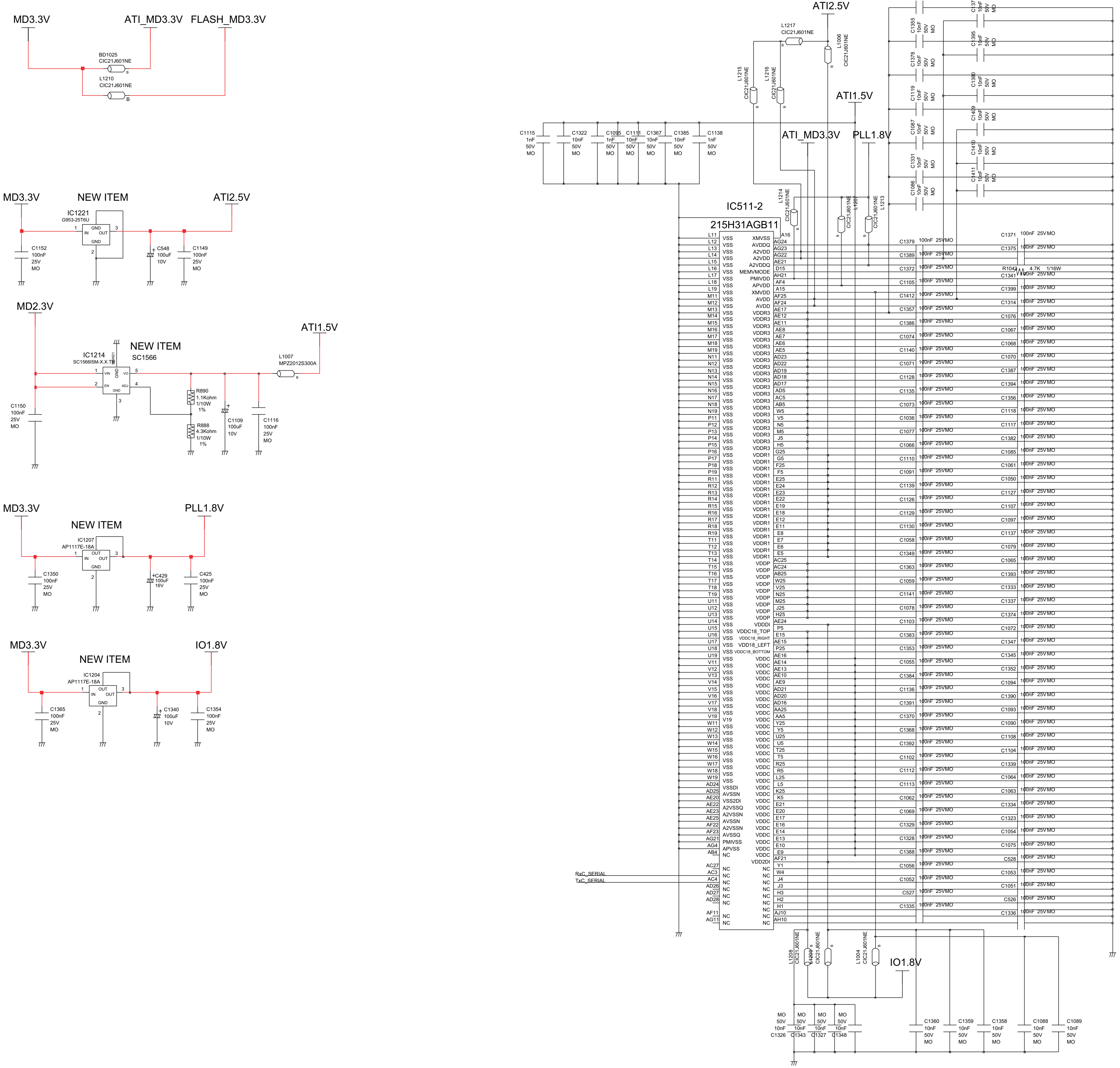
This Document can not be used without Samsung's authorization.


KOR : USED
US : DELETE
US : DELETE
KOR : USED
IC511-1
215H31AGB11
IC408
74LCX16245MTDX
IC503
74LCX16245MTDX
IC412
CY2305SC-1H
IC409
M24256-WMN6T
IC1206
MC74VHC244DTR2
IC29
MC74VHC244DTR2
IC33
MC74VHC244DTR2
X400
3DH-52S 27MHz
X401
X402
3DH-52S 27MHz
Q401
KRC104S
Q1202
KRC104S
Q7
Q8
CN200
ATI_MD3.3V
FLASH_MD3.3V
IO_MD3.3V
BUF_D3.3V
SCL_M
SDA_M
SCL_D
SDA_D
PWMA
PWMB
CLK27_CAS
27M_1394
VCOXB_IN
LAN_INT
BUS_STOP
DTV_CVBS
LPBK_PCLK
USBBP
USBBN
USBAP
USBAN
TSSB_SYNC
TSSB_VLD
TSSB_ERR
TSSB_CLK
TSSA_SYNC
TSSA_VLD
TSSA_ERR
TSSA_CLK
TS2_SYNC
TS2_VLD
TS2_CLK
TS2_ERR
TS1_SYNC
TS1_VLD
TS1_CLK
TS1_ERR
CH2_EN
CH1_EN
HD_HSYNC
HD_VSYNC
HD_CLK
HD_DE
DVOHSYNC
DVOVSYNC
DVOCLK1
DVODE
SERIAL_SEL
TxD_CONTROL
RxD_CONTROL
RxDM
TxDM
LAMP_RX
LAMP_TXn
SDA_MAIN_NIM
SCL_MAIN_NIM
SDA_SUB_NIM
SCL_SUB_NIM
nMAIN_7400_INT
nSUB_7400_INT
nHDMI_INT
nEXT_INT
MAIN_EEPROM_WP
SCL_EEPROM
SDA_EEPROM
EEPROM
1394S_DATA
1394S_LRCLK
1394S_SCLK
HDMIS_DATA
HDMIS_LRCLK
HDMIS_SCLK
EXT_AUDIO_DATA
EXT_AUDIO_LRCLK
EXT_AUDIO_SCLK
NT_I2S_DATA
NT_I2S_LRCLK
NT_I2S_SCLK
I2SIN_DATA
I2SIN_LRCLK
I2SIN_SCLK
I2S_SEL1
I2S_SEL2
DELETE

## 10-2-14 Digital-14

This Document can not be used without Samsung's authorization.

| | |
|---|---|
| ━ | Power |
| ━ | Signal |


MD3.3V
ATI_MD3.3V
FLASH_MD3.3V
BD1025
CIC21J601NE
L1210
CIC21J601NE
NEW ITEM
IC1221
G953-25T6U
IN
OUT
GND
ATI2.5V
C1152
100nF
25V
MO
C548
100uF
10V
C1149
100nF
25V
MO
MD2.3V
ATI1.5V
IC1214
SC1566I5M-X.X.TR
NEW ITEM
SC1566
VIN
VO
EN
ADJ
GND
L1007
MPZ2012S300A
R890
1.1Kohm
1/10W
1%
R888
4.3Kohm
1/10W
1%
C1150
100nF
25V
MO
C1109
100uF
10V
C1116
100nF
25V
MO
PLL1.8V
IC1207
AP1117E-18A
C1350
100nF
25V
MO
C429
100uF
16V
C425
100nF
25V
MO
IO1.8V
IC1204
AP1117E-18A
C1365
100nF
25V
MO
C1340
100uF
10V
C1354
100nF
25V
MO
ATI2.5V
L1217
CIC21J601NE
L1006
CIC21J601NE
L1215
CIC21J601NE
L1216
CIC21J601NE
ATI1.5V
ATI_MD3.3V
PLL1.8V
C1115
C1322
C1095
C1119
C1367
C1385
C1138
IC511-2
215H31AGB11
L1214
CIC21J601NE
L1212
CIC21J601NE
L1213
CIC21J601NE
VSS
XMVSS
AVDDQ
A2VDD
A2VDDQ
MEMVMODE
PMVDD
APVDD
XMVDD
AVDD
VDDR3
VDDR1
VDDP
VDDDI
VDDC18_TOP
VDDC18_RIGHT
VDD18_LEFT
VDDC18_BOTTOM
VDDC
VDD2DI
VSSDI
AVSSN
VSS2DI
A2VSSQ
A2VSSN
AVSSQ
PMVSS
APVSS
NC
RxC_SERIAL
TxC_SERIAL
R1041
4.7K
1/16W
100nF
25V
MO
10nF
50V
MO
L1208
CIC21J601NE
L1005
CIC21J601NE
L1004
CIC21J601NE
IO1.8V
C1326
C1343
C1327
C1348
C1360
C1359
C1358
C1088
C1089

## 10-2-15 Digital-15

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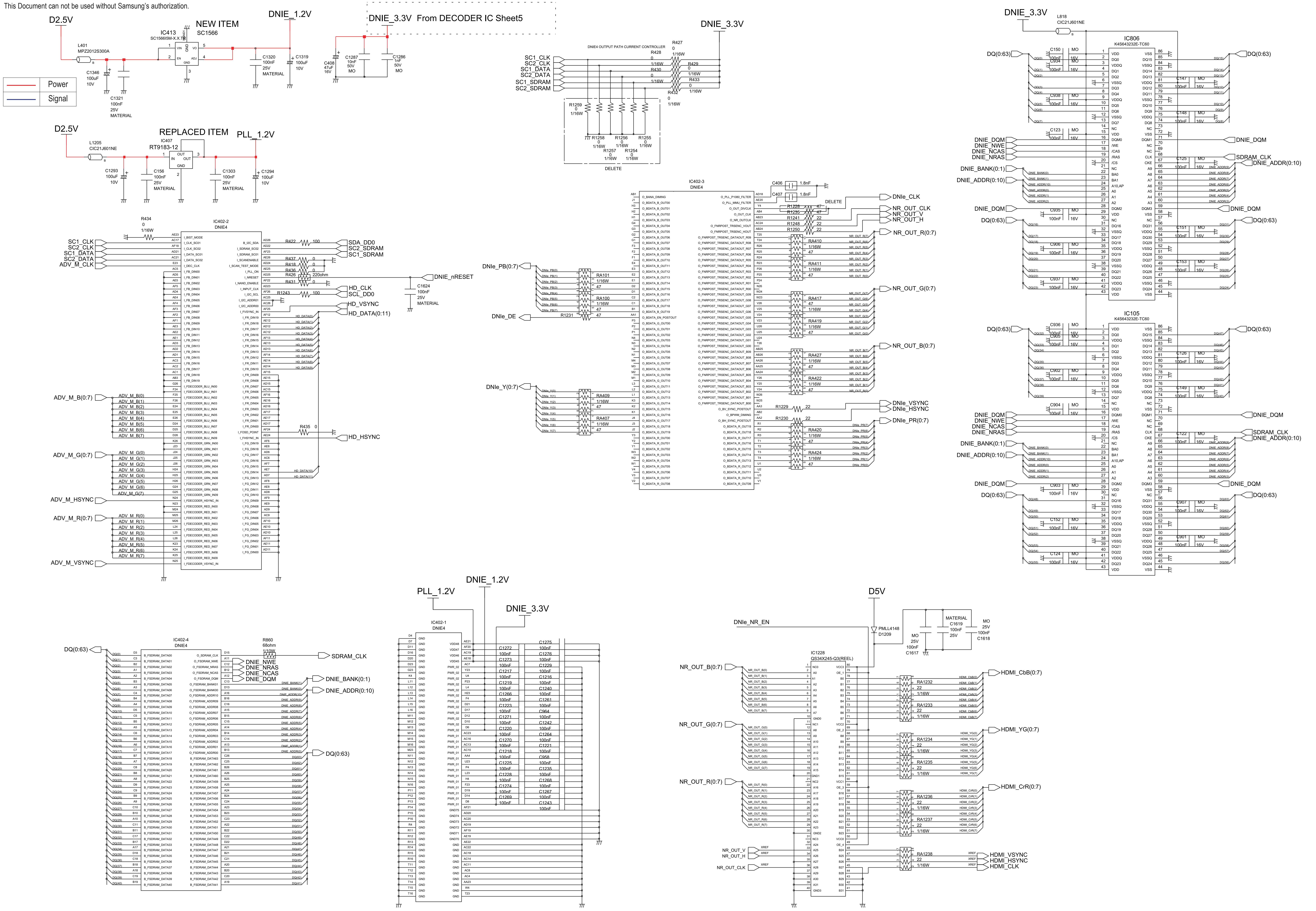
D2.5V
NEW ITEM
IC413 SC1566
DNIE_1.2V
DNIE_3.3V From DECODER IC Sheet5
Power
Signal
REPLACED ITEM
IC407 RT9183-12
PLL_1.2V
DNIE_3.3V
DNIE4 OUTPUT PATH CURRENT CONTROLLER
SC1_CLK
SC2_CLK
SC1_DATA
SC2_DATA
SC1_SDRAM
SC2_SDRAM
DELETE
IC402-2 DNIE4
IC402-3 DNIE4
SDA_DD0
SC2_SDRAM
SC1_SDRAM
DNIE_nRESET
HD_CLK
SCL_DD0
HD_VSYNC
HD_DATA(0:11)
HD_HSYNC
ADV_M_CLK
ADV_M_B(0:7)
ADV_M_G(0:7)
ADV_M_HSYNC
ADV_M_R(0:7)
ADV_M_VSYNC
DNIe_PB(0:7)
DNIe_DE
DNIe_Y(0:7)
DNIe_CLK
NR_OUT_CLK
NR_OUT_V
NR_OUT_H
NR_OUT_R(0:7)
NR_OUT_G(0:7)
NR_OUT_B(0:7)
DNIe_VSYNC
DNIe_HSYNC
DNIe_PR(0:7)
DNIE_3.3V
IC806 K4S643232E-TC60
IC105 K4S643232E-TC60
DQ(0:63)
DNIE_DQM
DNIE_NWE
DNIE_NCAS
DNIE_NRAS
DNIE_BANK(0:1)
DNIE_ADDR(0:10)
SDRAM_CLK
IC402-4 DNIE4
IC402-1 DNIE4
DNIE_1.2V
PLL_1.2V
DNIE_3.3V
D5V
DNIe_NR_EN
IC1228 QS34X245-Q3(REEL)
HDMI_CbB(0:7)
HDMI_YG(0:7)
HDMI_CrR(0:7)
HDMI_VSYNC
HDMI_HSYNC
HDMI_CLK

## 10-2-16 Digital-16

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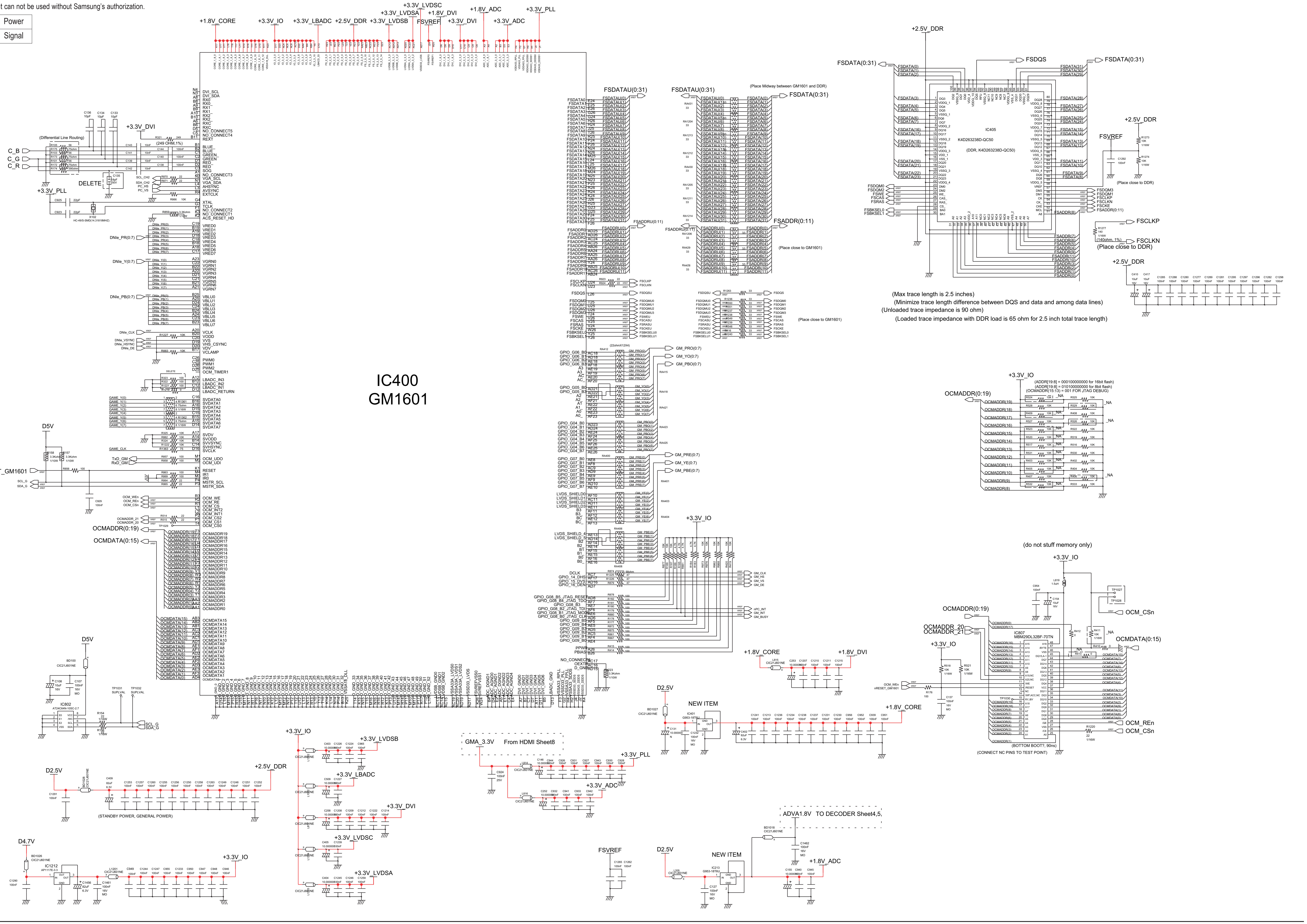
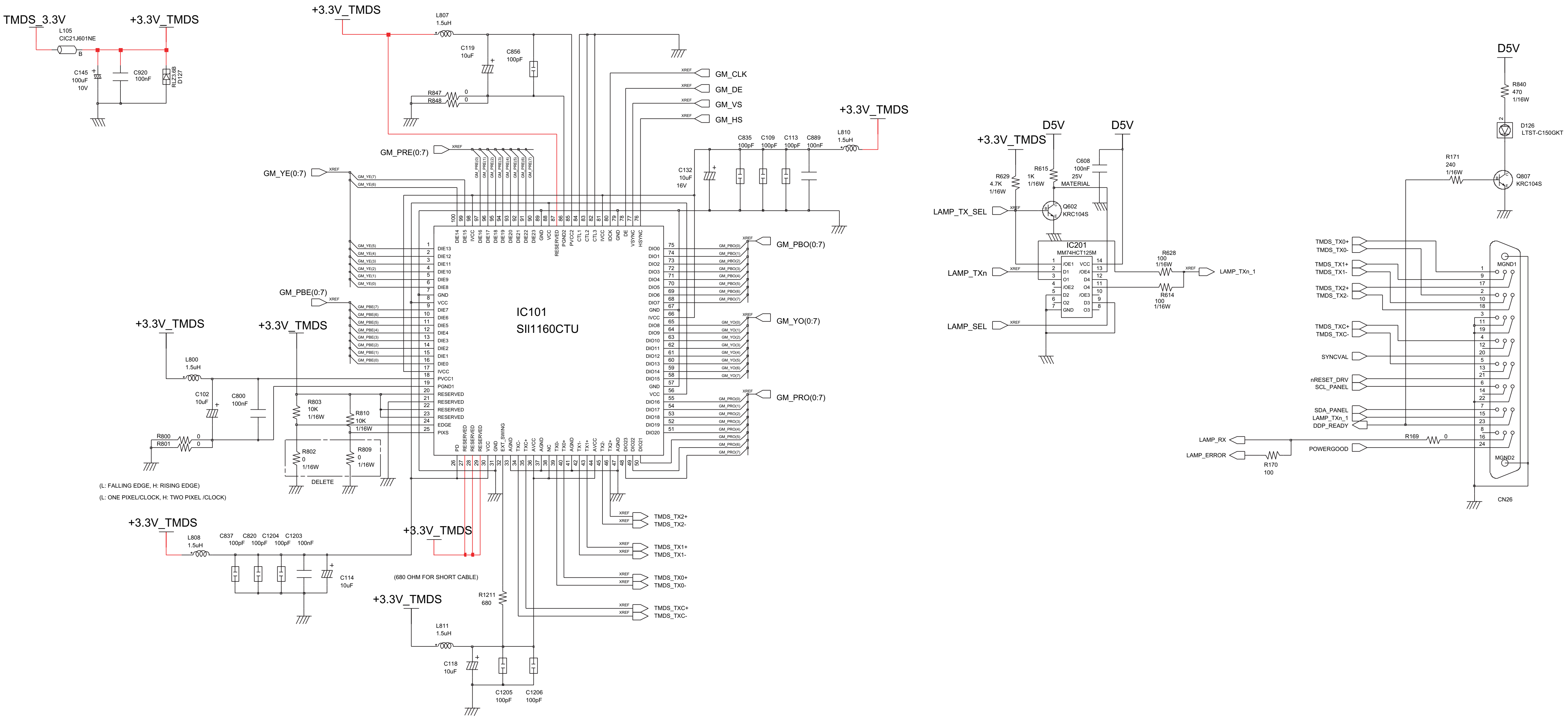
| | |
|---|---|
| 🟥 | Power |
| 🟦 | Signal |


IC400
GM1601
+1.8V_CORE
+3.3V_IO
+3.3V_LBADC
+2.5V_DDR
+3.3V_LVDSB
+3.3V_LVDSC
+3.3V_LVDSA
FSVREF
+1.8V_DVI
+3.3V_DVI
+1.8V_ADC
+3.3V_ADC
+3.3V_PLL
C_B
C_G
C_R
(Differential Line Routing)
DELETE
D5V
nRESET_GM1601
OCMADDR(0:19)
OCMDATA(0:15)
FSDATAU(0:31)
FSDATA(0:31)
FSADDRU(0:11)
FSADDR(0:11)
(Place Midway between GM1601 and DDR)
(Place close to GM1601)
GM_PRO(0:7)
GM_YO(0:7)
GM_PBO(0:7)
GM_PRE(0:7)
GM_YE(0:7)
GM_PBE(0:7)
IC405
K4D263238D-QC50
(DDR, K4D263238D-QC50)
FSDQS
FSCLKP
FSCLKN
(140ohm, 1%)
(Place close to DDR)
(Max trace length is 2.5 inches)
(Minimize trace length difference between DQS and data and among data lines)
(Unloaded trace impedance is 90 ohm)
(Loaded trace impedance with DDR load is 65 ohm for 2.5 inch total trace length)
(ADDR[19:8] = 000100000000 for 16bit flash)
(ADDR[19:8] = 010100000000 for 8bit flash)
(OCMADDR[15:13] = 001 FOR JTAG DEBUG)
(do not stuff memory only)
IC807
MBM29DL32BF-70TN
OCMADDR_20
OCMADDR_21
OCM_CSn
OCM_REn
(BOTTOM BOOT?, 90ns)
(CONNECT NC PINS TO TEST POINT)
IC802
AT24C04N-10SC-2.7
IC1212
AP1117E-3.3
D2.5V
D4.7V
(STANDBY POWER, GENERAL POWER)
GMA_3.3V From HDMI Sheet8
NEW ITEM
IC401
G963-18T6U
IC213
G963-18T6U
ADVA1.8V TO DECODER Sheet4,5.
SCL_G
SDA_G
TxD_GM
RxD_GM
GM_CLK
GM_HS
GM_VS
GM_DE
nPC_INT
GM_INT
GM_BUSY

## 10-2-17 Digital-17

This Document can not be used without Samsung's authorization.

| | |
|---|---|
| 🟥 | Power |
| 🟦 | Signal |


TMDS_3.3V
+3.3V_TMDS
L105
CIC21J601NE
B
C145
100uF
10V
C920
100nF
RLZ3.6B
D127
+3.3V_TMDS
L807
1.5uH
C119
10uF
C856
100pF
R847
R848
0
0
GM_CLK
GM_DE
GM_VS
GM_HS
XREF
GM_PRE(0:7)
GM_YE(0:7)
GM_PBE(0:7)
+3.3V_TMDS
C835
100pF
C109
100pF
C113
100pF
C889
100nF
L810
1.5uH
C132
10uF
16V
IC101
SII1160CTU
GM_PBO(0:7)
GM_YO(0:7)
GM_PRO(0:7)
+3.3V_TMDS
+3.3V_TMDS
L800
1.5uH
C102
10uF
C800
100nF
R803
10K
1/16W
R810
10K
1/16W
R800
R801
0
0
R802
0
1/16W
R809
0
1/16W
DELETE
(L: FALLING EDGE, H: RISING EDGE)
(L: ONE PIXEL/CLOCK, H: TWO PIXEL /CLOCK)
+3.3V_TMDS
L808
1.5uH
C837
100pF
C820
100pF
C1204
100pF
C1203
100nF
C114
10uF
+3.3V_TMDS
(680 OHM FOR SHORT CABLE)
R1211
680
+3.3V_TMDS
L811
1.5uH
C118
10uF
C1205
100pF
C1206
100pF
TMDS_TX2+
TMDS_TX2-
TMDS_TX1+
TMDS_TX1-
TMDS_TX0+
TMDS_TX0-
TMDS_TXC+
TMDS_TXC-
+3.3V_TMDS
D5V
D5V
R629
4.7K
1/16W
R615
1K
1/16W
C608
100nF
25V
MATERIAL
LAMP_TX_SEL
Q602
KRC104S
IC201
MM74HCT125M
LAMP_TXn
LAMP_SEL
R628
100
1/16W
R614
100
1/16W
LAMP_TXn_1
D5V
R840
470
1/16W
D126
LTST-C150GKT
R171
240
1/16W
Q807
KRC104S
TMDS_TX0+
TMDS_TX0-
TMDS_TX1+
TMDS_TX1-
TMDS_TX2+
TMDS_TX2-
TMDS_TXC+
TMDS_TXC-
SYNCVAL
nRESET_DRV
SCL_PANEL
SDA_PANEL
LAMP_TXn_1
DDP_READY
POWERGOOD
R169
0
LAMP_RX
LAMP_ERROR
R170
100
MGND1
MGND2
CN26

## 10-2-18 Digital-18

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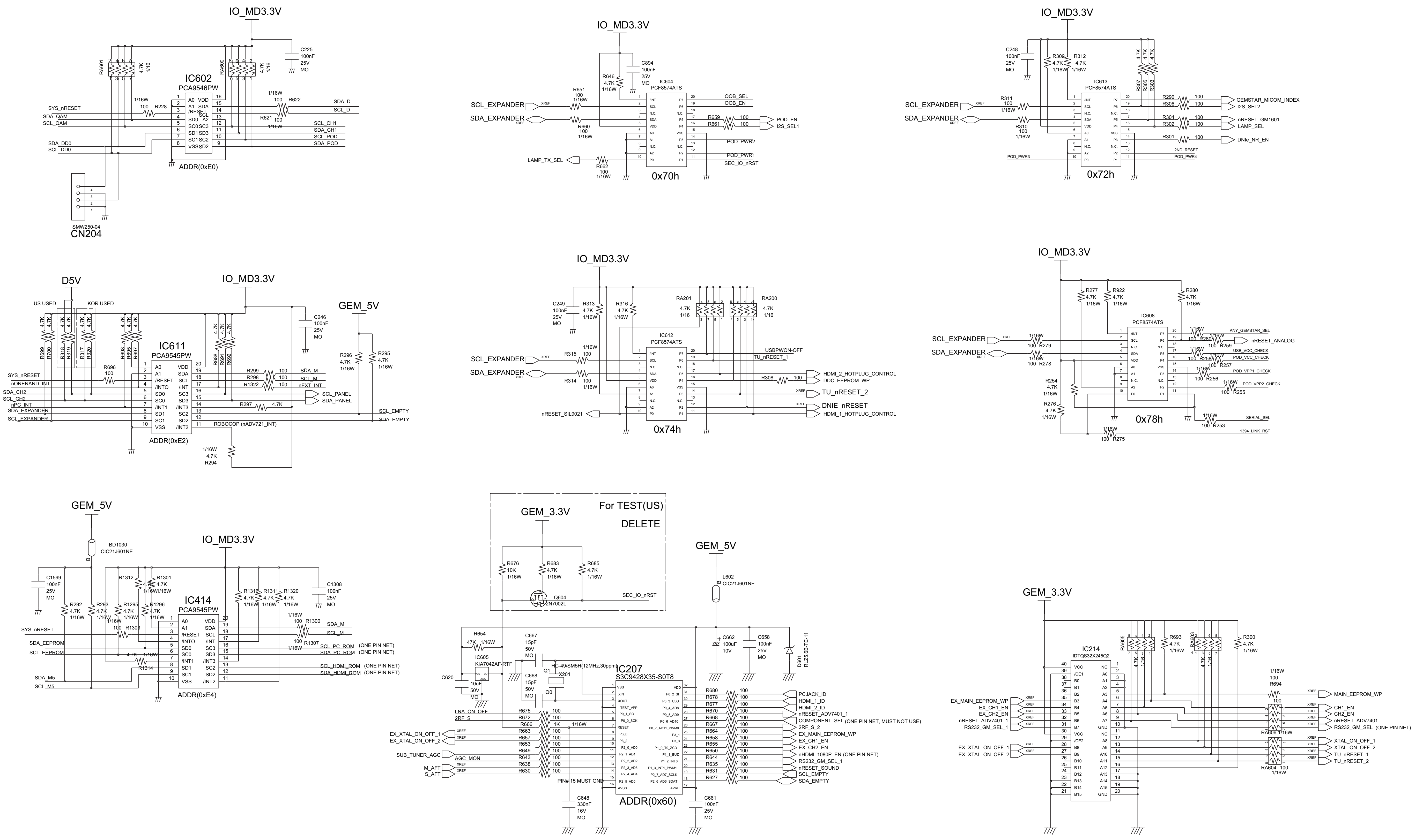
IO_MD3.3V
IC602
PCA9546PW
ADDR(0xE0)
RA601
RA600
C225
100nF
25V
MO
R228
R622
R621
SYS_nRESET
SDA_QAM
SCL_QAM
SDA_DD0
SCL_DD0
SDA_D
SCL_D
SCL_CH1
SDA_CH1
SCL_POD
SDA_POD
SMW250-04
CN204
IC604
PCF8574ATS
0x70h
C894
R646
R651
R660
R659
R661
R662
SCL_EXPANDER
SDA_EXPANDER
OOB_SEL
OOB_EN
POD_EN
I2S_SEL1
POD_PWR2
POD_PWR1
SEC_IO_nRST
LAMP_TX_SEL
IC613
PCF8574ATS
0x72h
C248
R309
R312
R311
R310
R290
R306
R304
R302
R301
GEMSTAR_MICOM_INDEX
I2S_SEL2
nRESET_GM1601
LAMP_SEL
DNIe_NR_EN
2ND_RESET
POD_PWR3
POD_PWR4
D5V
US USED
KOR USED
IC611
PCA9545PW
ADDR(0xE2)
GEM_5V
C246
R296
R295
R696
R299
R298
R1322
R297
R294
SYS_nRESET
nONENAND_INT
SDA_CH2
SCL_CH2
nPC_INT
SDA_EXPANDER
SCL_EXPANDER
SDA_M
SCL_M
nEXT_INT
SCL_PANEL
SDA_PANEL
SCL_EMPTY
SDA_EMPTY
ROBOCOP (nADV721_INT)
IC612
PCF8574ATS
0x74h
C249
R313
R316
RA201
RA200
R315
R314
R308
USBPWON-OFF
TU_nRESET_1
HDMI_2_HOTPLUG_CONTROL
DDC_EEPROM_WP
TU_nRESET_2
DNIE_nRESET
HDMI_1_HOTPLUG_CONTROL
nRESET_SIL9021
IC608
PCF8574ATS
0x78h
R277
R922
R280
R279
R278
R254
R276
R260
R259
R258
R257
R256
R255
R253
R275
ANY_GEMSTAR_SEL
nRESET_ANALOG
USB_VCC_CHECK
POD_VCC_CHECK
POD_VPP1_CHECK
POD_VPP2_CHECK
SERIAL_SEL
1394_LINK_RST
GEM_5V
BD1030
CIC21J601NE
IO_MD3.3V
IC414
PCA9545PW
ADDR(0xE4)
C1599
C1308
R1312
R1301
R292
R293
R1295
R1296
R1316
R1311
R1320
R1300
R1303
R1307
R1314
SYS_nRESET
SDA_EEPROM
SCL_EEPROM
SDA_M5
SCL_M5
SDA_M
SCL_M
SCL_PC_ROM (ONE PIN NET)
SDA_PC_ROM (ONE PIN NET)
SCL_HDMI_ROM (ONE PIN NET)
SDA_HDMI_ROM (ONE PIN NET)
For TEST(US)
DELETE
GEM_3.3V
R676
R683
R685
Q604
2N7002L
SEC_IO_nRST
GEM_5V
L602
CIC21J601NE
C662
C658
D601
RLZ5.6B-TE-11
IC207
S3C9428X35-S0T8
ADDR(0x60)
R654
IC605
KIA7042AF-RTF
C667
C668
C620
X201
HC-49/SM5H(12MHz,30ppm)
C648
C661
PIN#15 MUST GND
LNA_ON_OFF
2RF_S
EX_XTAL_ON_OFF_1
EX_XTAL_ON_OFF_2
SUB_TUNER_AGC
AGC_MON
M_AFT
S_AFT
PCJACK_ID
HDMI_1_ID
HDMI_2_ID
nRESET_ADV7401_1
COMPONENT_SEL (ONE PIN NET, MUST NOT USE)
2RF_S_2
EX_MAIN_EEPROM_WP
EX_CH1_EN
EX_CH2_EN
nHDMI_1080P_EN (ONE PIN NET)
RS232_GM_SEL_1
nRESET_SOUND
SCL_EMPTY
SDA_EMPTY
GEM_3.3V
IC214
IDTQS32X245Q2
RA605
RA603
R693
R300
R694
RA606
RA604
EX_MAIN_EEPROM_WP
EX_CH1_EN
EX_CH2_EN
nRESET_ADV7401_1
RS232_GM_SEL_1
EX_XTAL_ON_OFF_1
EX_XTAL_ON_OFF_2
MAIN_EEPROM_WP
CH1_EN
CH2_EN
nRESET_ADV7401
RS232_GM_SEL (ONE PIN NET)
XTAL_ON_OFF_1
XTAL_ON_OFF_2
TU_nRESET_1
TU_nRESET_2

## 10-3 DMD Board

### 10-3-1 DMD-1

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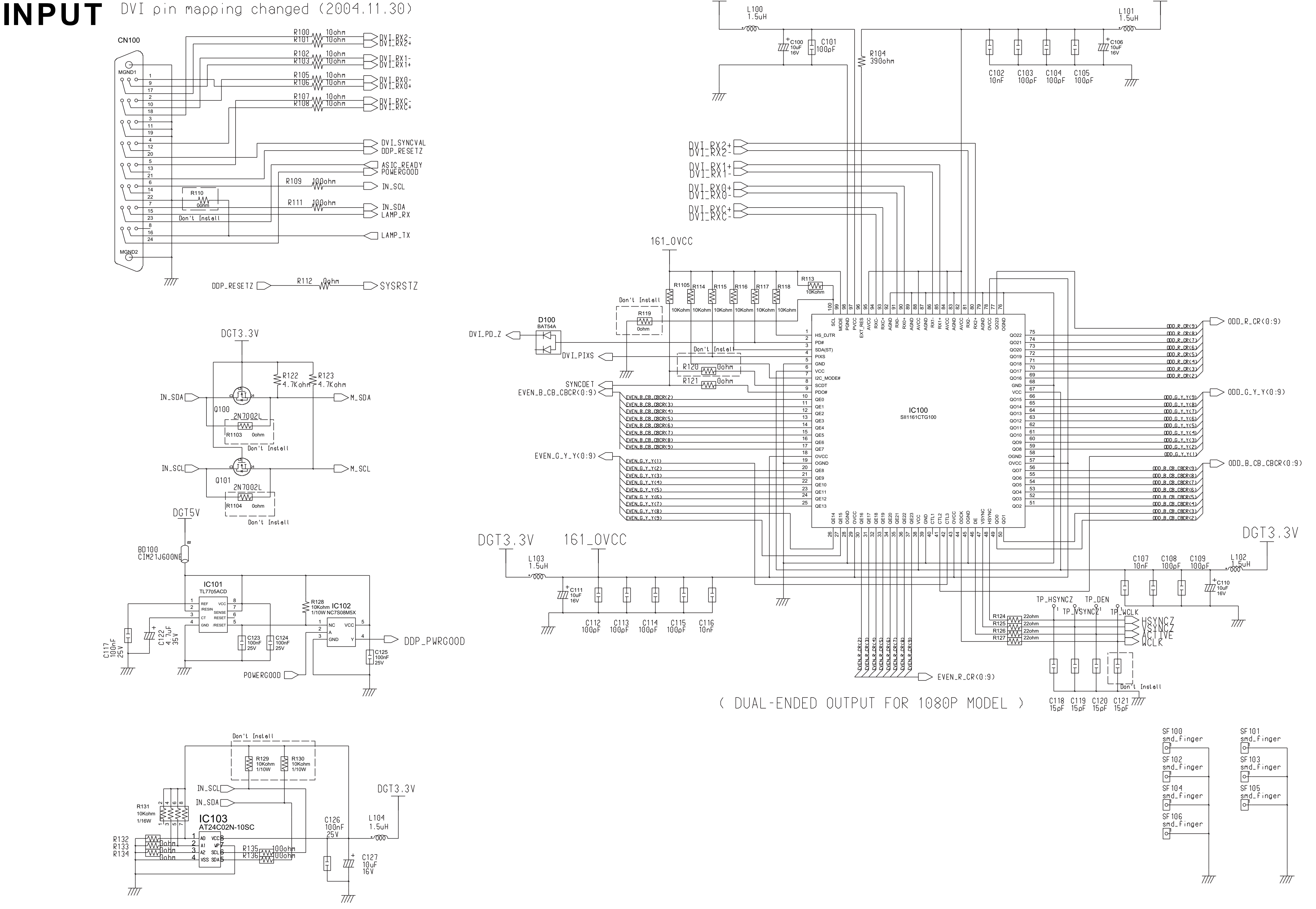
INPUT
DVI pin mapping changed (2004.11.30)
CN100
MGND1
MGND2
R100 10ohm
R101 10ohm
DVI_RX2-
DVI_RX2+
R102 10ohm
R103 10ohm
DVI_RX1-
DVI_RX1+
R105 10ohm
R106 10ohm
DVI_RX0-
DVI_RX0+
R107 10ohm
R108 10ohm
DVI_RXC-
DVI_RXC+
DVI_SYNCVAL
DDP_RESETZ
ASIC_READY
POWERGOOD
R109 100ohm
IN_SCL
R110 0ohm
Don't Install
R111 100ohm
IN_SDA
LAMP_RX
LAMP_TX
DDP_RESETZ
R112 0ohm
SYSRSTZ
DGT3.3V
R122 4.7Kohm
R123 4.7Kohm
IN_SDA
M_SDA
Q100 2N7002L
R1103 0ohm
IN_SCL
M_SCL
Q101 2N7002L
R1104 0ohm
DGT5V
BD100 CIM21J600NE
IC101 TL7705ACD
R128 10Kohm 1/10W
IC102 NC7S08M5X
C117 100nF 25V
C122 4.7uF 35V
C123 100nF 25V
C124 100nF 25V
C125 100nF 25V
DDP_PWRGOOD
POWERGOOD
R129 10Kohm 1/10W
R130 10Kohm 1/10W
IN_SCL
IN_SDA
R131 10Kohm 1/16W
IC103 AT24C02N-10SC
R132 0ohm
R133 0ohm
R134 0ohm
R135 100ohm
R136 100ohm
C126 100nF 25V
L104 1.5uH
C127 10uF 16V
DGT3.3V
L100 1.5uH
C100 10uF 16V
C101 100pF
R104 390ohm
L101 1.5uH
C106 10uF 16V
C102 10nF
C103 100pF
C104 100pF
C105 100pF
DVI_RX2+
DVI_RX2-
DVI_RX1+
DVI_RX1-
DVI_RX0+
DVI_RX0-
DVI_RXC+
DVI_RXC-
161_OVCC
R1105
R114
R115
R116
R117
R118
10Kohm
R113 10Kohm
R119 0ohm
D100 BAT54A
DVI_PD_Z
DVI_PIXS
R120 0ohm
R121 0ohm
SYNCDET
EVEN_B_CB_CBCR(0:9)
EVEN_G_Y_Y(0:9)
IC100
SII1161CTG100
ODD_R_CR(0:9)
ODD_G_Y_Y(0:9)
ODD_B_CB_CBCR(0:9)
L103 1.5uH
C111 10uF 16V
C112 100pF
C113 100pF
C114 100pF
C115 100pF
C116 10nF
C107 10nF
C108 100pF
C109 100pF
L102 1.5uH
C110 10uF 16V
TP_HSYNCZ
TP_DEN
TP_VSYNCZ
TP_WCLK
R124 22ohm
R125 22ohm
R126 22ohm
R127 22ohm
HSYNCZ
VSYNCZ
ACTIVE
WCLK
EVEN_R_CR(0:9)
C118 15pF
C119 15pF
C120 15pF
C121 15pF
( DUAL-ENDED OUTPUT FOR 1080P MODEL )
SF100 smd_Finger
SF101 smd_Finger
SF102 smd_Finger
SF103 smd_Finger
SF104 smd_Finger
SF105 smd_Finger
SF106 smd_Finger

## 10-3-2 DMD-2

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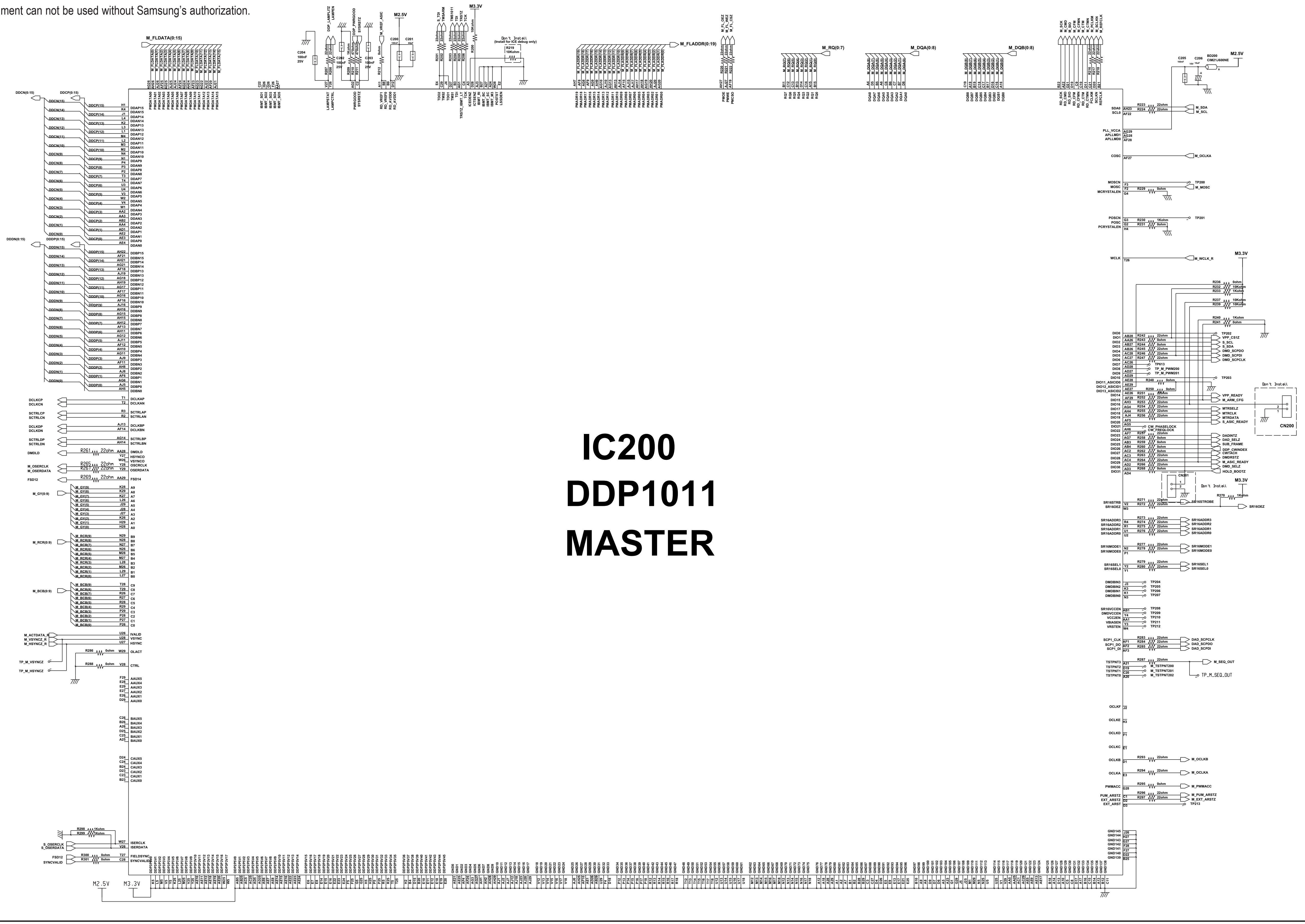
IC200
DDP1011
MASTER
M_FLDATA(0:15)
M_FLADDR(0:19)
M_RQ(0:7)
M_DQA(0:8)
M_DQB(0:8)
DDCN(0:15)
DDCP(0:15)
DDDN(0:15)
DDDP(0:15)
M_GY(0:9)
M_RCR(0:9)
M_BCB(0:9)
M2.5V
M3.3V
CN200
CN201
Don't Install
M_SDA
M_SCL
M_OCLKA
M_OCLKB
M_WCLK_R
M_SEQ_OUT
TP_M_SEQ_OUT
M_PWMACC
M_PUM_ARSTZ
M_EXT_ARSTZ
SR16OEZ
SR16STROBE

## 10-3-3 DMD-3

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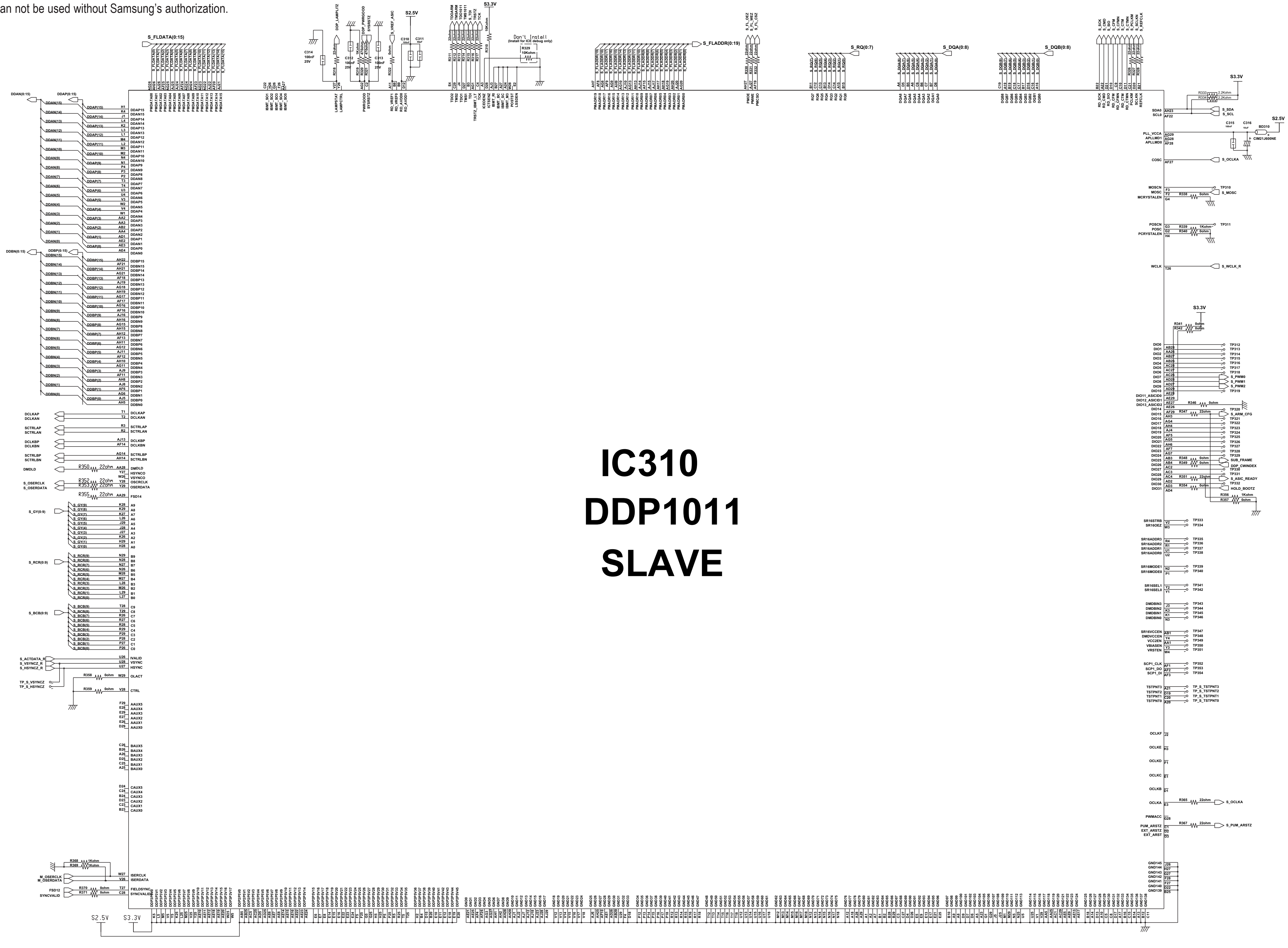
IC310
DDP1011
SLAVE
S_FLDATA(0:15)
S_FLADDR(0:19)
S_RQ(0:7)
S_DQA(0:8)
S_DQB(0:8)
DDAN(0:15)
DDAP(0:15)
DDBN(0:15)
DDBP(0:15)
S_GY(0:9)
S_RCR(0:9)
S_BCB(0:9)
S2.5V
S3.3V
Don't Install
(Install for ICE debug only)
S_SDA
S_SCL
S_OCLKA
S_MOSC
S_WCLK_R
S_PWM0
S_PWM1
S_PWM2
S_ARM_CFG
SUB_FRAME
DDP_CWINDEX
S_ASIC_READY
HOLD_BOOTZ
S_PUM_ARSTZ
S_ACTDATA_R
S_VSYNCZ_R
S_HSYNCZ_R
TP_S_VSYNCZ
TP_S_HSYNCZ
S_OSERCLK
S_OSERDATA
M_OSERCLK
M_OSERDATA
FSD12
SYNCVALID

## 10-3-4 DMD-4

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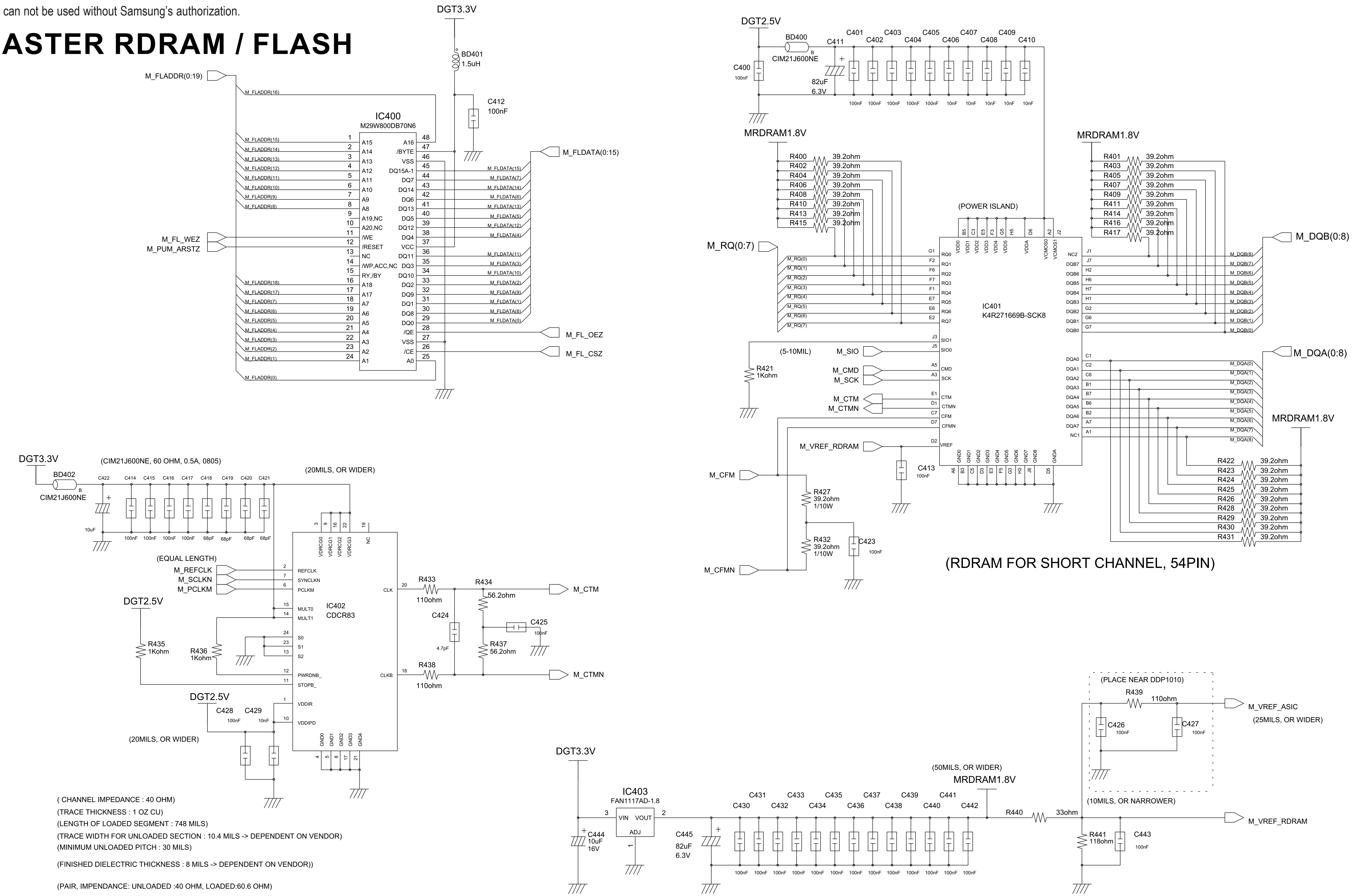
# MASTER RDRAM / FLASH


DGT3.3V
BD401 1.5uH
C412 100nF
M_FLADDR(0:19)
IC400
M29W800DB70N6
M_FLDATA(0:15)
M_FL_WEZ
M_PUM_ARSTZ
M_FL_OEZ
M_FL_CSZ
DGT2.5V
BD400 CIM21J600NE
C400 100nF
C411 82uF 6.3V
C401 C402 C403 C404 C405 C406 C407 C408 C409 C410
MRDRAM1.8V
R400 R402 R404 R406 R408 R410 R413 R415 39.2ohm
R401 R403 R405 R407 R409 R411 R414 R416 R417 39.2ohm
(POWER ISLAND)
M_RQ(0:7)
M_DQB(0:8)
M_DQA(0:8)
IC401
K4R271669B-SCK8
(5-10MIL)
M_SIO
R421 1Kohm
M_CMD
M_SCK
M_CTM
M_CTMN
M_VREF_RDRAM
C413 100nF
M_CFM
R427 39.2ohm 1/10W
R432 39.2ohm 1/10W
C423 100nF
M_CFMN
R422 R423 R424 R425 R426 R428 R429 R430 R431 39.2ohm
(RDRAM FOR SHORT CHANNEL, 54PIN)
DGT3.3V
BD402 CIM21J600NE
(CIM21J600NE, 60 OHM, 0.5A, 0805)
C422 10uF
C414 C415 C416 C417 C418 C419 C420 C421
(20MILS, OR WIDER)
(EQUAL LENGTH)
M_REFCLK
M_SCLKN
M_PCLKM
IC402
CDCR83
R433 110ohm
R434 56.2ohm
C424 4.7pF
C425 100nF
R437 56.2ohm
R438 110ohm
M_CTM
M_CTMN
DGT2.5V
R435 1Kohm
R436 1Kohm
DGT2.5V
C428 100nF
C429 10nF
(20MILS, OR WIDER)
DGT3.3V
IC403
FAN1117AD-1.8
C444 10uF 16V
C445 82uF 6.3V
C430 C431 C432 C433 C434 C435 C436 C437 C438 C439 C440 C441 C442
(50MILS, OR WIDER)
MRDRAM1.8V
R440 33ohm
R441 118ohm
C443 100nF
(PLACE NEAR DDP1010)
R439 110ohm
C426 100nF
C427 100nF
M_VREF_ASIC
(25MILS, OR WIDER)
(10MILS, OR NARROWER)
M_VREF_RDRAM

( CHANNEL IMPEDANCE : 40 OHM)
(TRACE THICKNESS : 1 OZ CU)
(LENGTH OF LOADED SEGMENT : 748 MILS)
(TRACE WIDTH FOR UNLOADED SECTION : 10.4 MILS -> DEPENDENT ON VENDOR)
(MINIMUM UNLOADED PITCH : 30 MILS)

(FINISHED DIELECTRIC THICKNESS : 8 MILS -> DEPENDENT ON VENDOR))

(PAIR, IMPENDANCE: UNLOADED :40 OHM, LOADED:60.6 OHM)

(ROUTING: CDCR83-> RDRAM(CTM) -> DDP1010(CFM) -> RDRAM -> TERMINATION RESISTOR))

(RSL : RQ(0:7), RQA(0:8), RQB(0:8), RD_CTM, RD_CTMN, RD_CFM, RD_CFMN, RD_CMD, RD_SCK)

(50 OHM IMPEDANCE : RD_REFCLK, RD_SCLKN, RD_PCLKN)

(ALL RSL SIGNALS, SCK, CMD, DIFF CLOCK PAIRS MUST HAVE MATCHED ELECTRICAL LENGTH)

## 10-3-5 DMD-5

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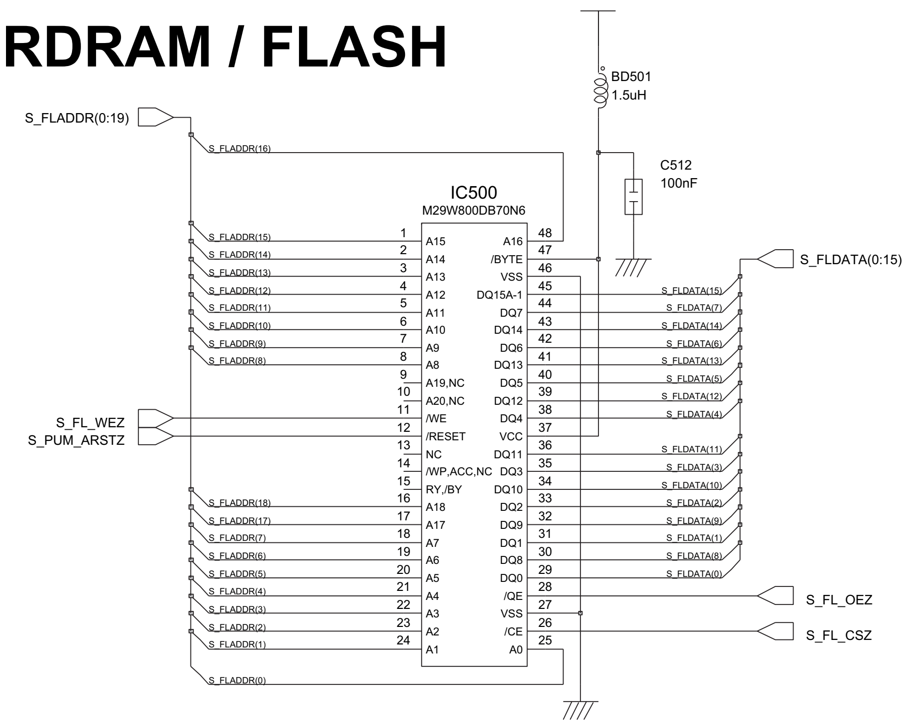
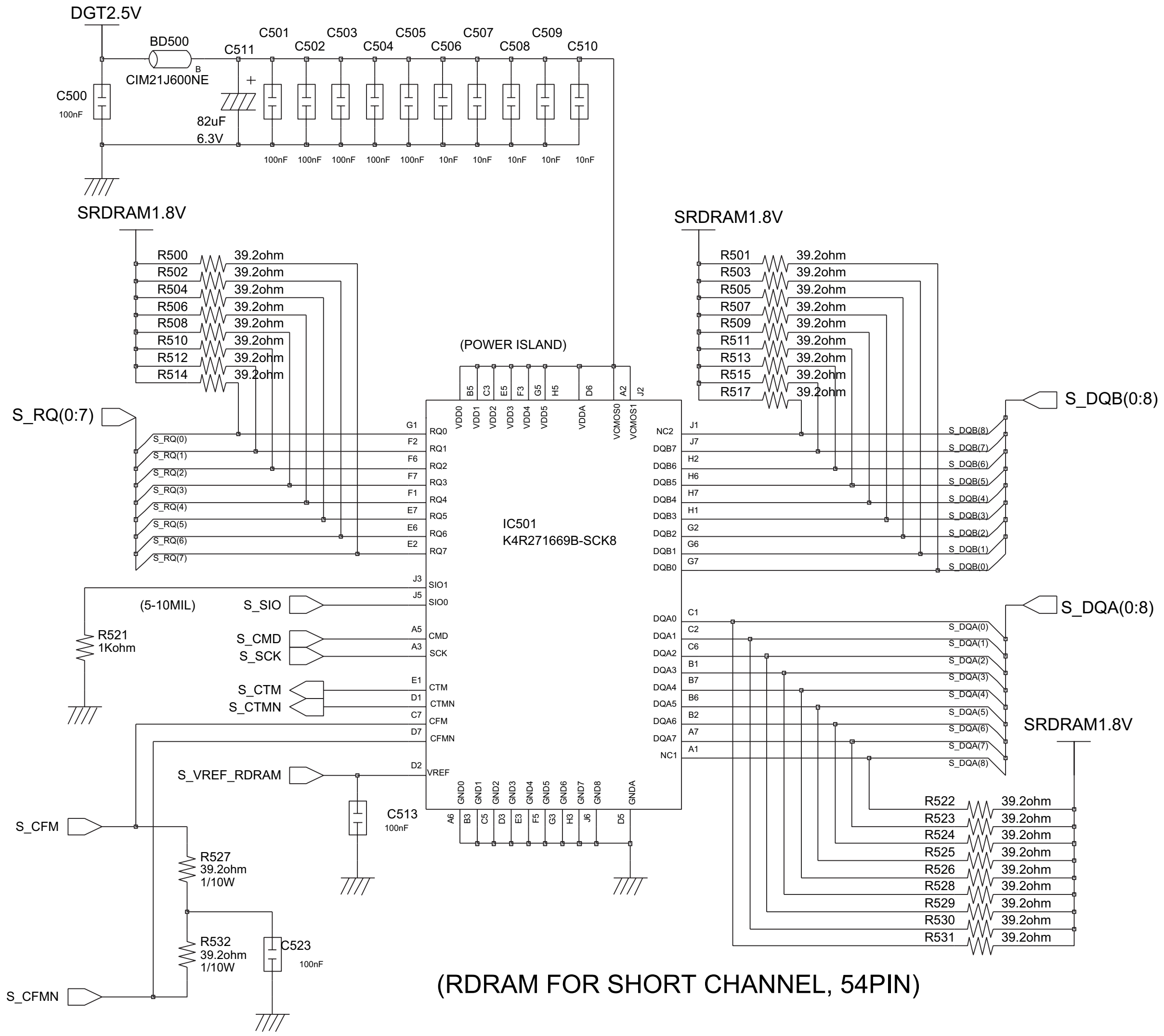
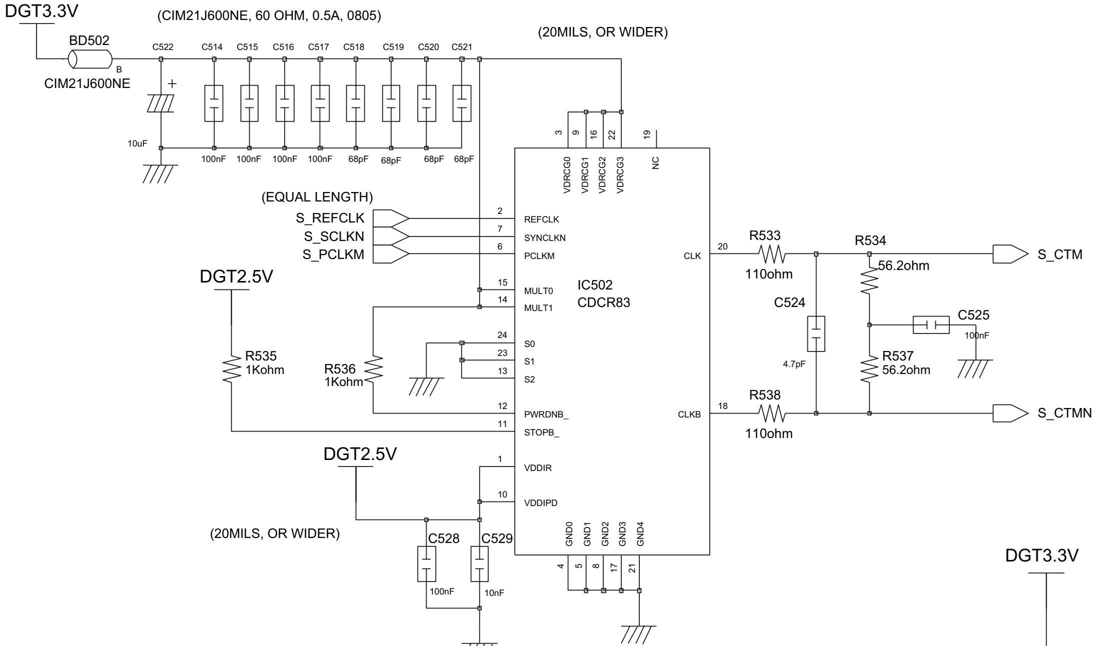
# SLAVE RDRAM / FLASH


DGT3.3V
BD501
1.5uH
C512
100nF
S_FLADDR(0:19)
IC500
M29W800DB70N6
A15
A14
A13
A12
A11
A10
A9
A8
A19,NC
A20,NC
/WE
/RESET
NC
/WP,ACC,NC
RY,/BY
A18
A17
A7
A6
A5
A4
A3
A2
A1
A16
/BYTE
VSS
DQ15A-1
DQ7
DQ14
DQ6
DQ13
DQ5
DQ12
DQ4
VCC
DQ11
DQ3
DQ10
DQ2
DQ9
DQ1
DQ8
DQ0
/OE
VSS
/CE
A0
S_FL_WEZ
S_PUM_ARSTZ
S_FLDATA(0:15)
S_FL_OEZ
S_FL_CSZ


DGT2.5V
BD500
CIM21J600NE
C500
100nF
C511
82uF
6.3V
C501
C502
C503
C504
C505
C506
C507
C508
C509
C510
SRDRAM1.8V
R500 39.2ohm
R502 39.2ohm
R504 39.2ohm
R506 39.2ohm
R508 39.2ohm
R510 39.2ohm
R512 39.2ohm
R514 39.2ohm
R501 39.2ohm
R503 39.2ohm
R505 39.2ohm
R507 39.2ohm
R509 39.2ohm
R511 39.2ohm
R513 39.2ohm
R515 39.2ohm
R517 39.2ohm
(POWER ISLAND)
S_RQ(0:7)
IC501
K4R271669B-SCK8
S_DQB(0:8)
S_DQA(0:8)
(5-10MIL)
S_SIO
R521
1Kohm
S_CMD
S_SCK
S_CTM
S_CTMN
S_VREF_RDRAM
C513
100nF
S_CFM
R527
39.2ohm
1/10W
R532
39.2ohm
1/10W
C523
100nF
S_CFMN
SRDRAM1.8V
R522 39.2ohm
R523 39.2ohm
R524 39.2ohm
R525 39.2ohm
R526 39.2ohm
R528 39.2ohm
R529 39.2ohm
R530 39.2ohm
R531 39.2ohm
(RDRAM FOR SHORT CHANNEL, 54PIN)


DGT3.3V
(CIM21J600NE, 60 OHM, 0.5A, 0805)
BD502
CIM21J600NE
C522
C514
C515
C516
C517
C518
C519
C520
C521
10uF
100nF
68pF
(20MILS, OR WIDER)
(EQUAL LENGTH)
S_REFCLK
S_SCLKN
S_PCLKM
DGT2.5V
R535
1Kohm
R536
1Kohm
IC502
CDCR83
REFCLK
SYNCLKN
PCLKM
MULT0
MULT1
S0
S1
S2
PWRDNB_
STOPB_
VDDIR
VDDIPD
CLK
CLKB
R533
110ohm
R534
56.2ohm
C524
4.7pF
C525
100nF
R537
56.2ohm
R538
110ohm
S_CTM
S_CTMN
DGT2.5V
(20MILS, OR WIDER)
C528
100nF
C529
10nF

( CHANNEL IMPEDANCE : 40 OHM)

(TRACE THICKNESS : 1 OZ CU)

(LENGTH OF LOADED SEGMENT : 748 MILS)

(TRACE WIDTH FOR UNLOADED SECTION : 10.4 MILS -> DEPENDENT ON VENDOR)

(MINIMUM UNLOADED PITCH : 30 MILS)

(FINISHED DIELECTRIC THICKNESS : 8 MILS -> DEPENDENT ON VENDOR))

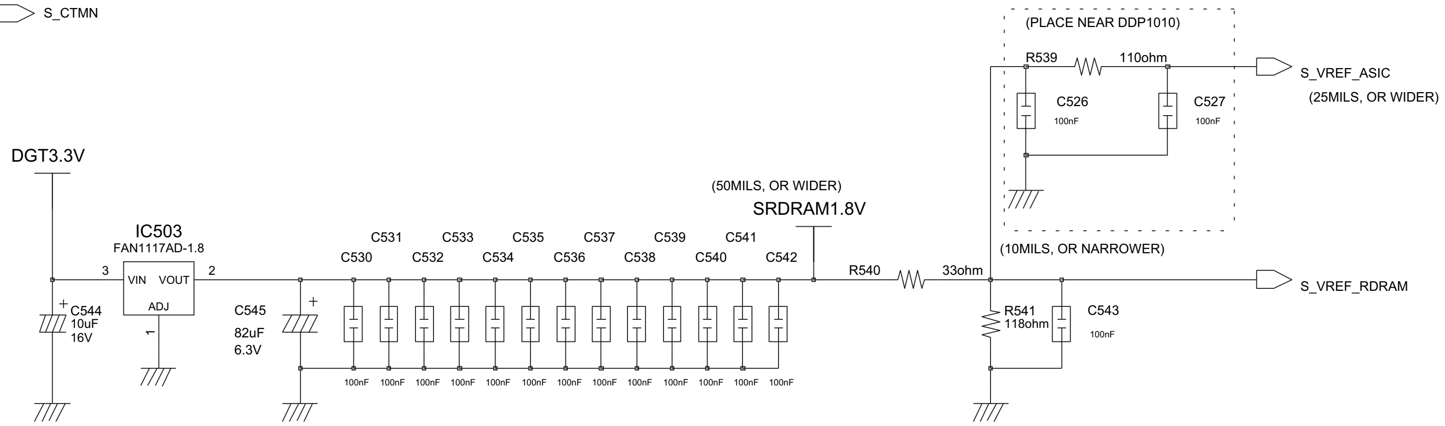
(PAIR, IMPENDANCE: UNLOADED :40 OHM, LOADED:60.6 OHM)

(ROUTING: CDCR83-> RDRAM(CTM) -> DDP1010(CFM) -> RDRAM -> TERMINATION RESISTOR))

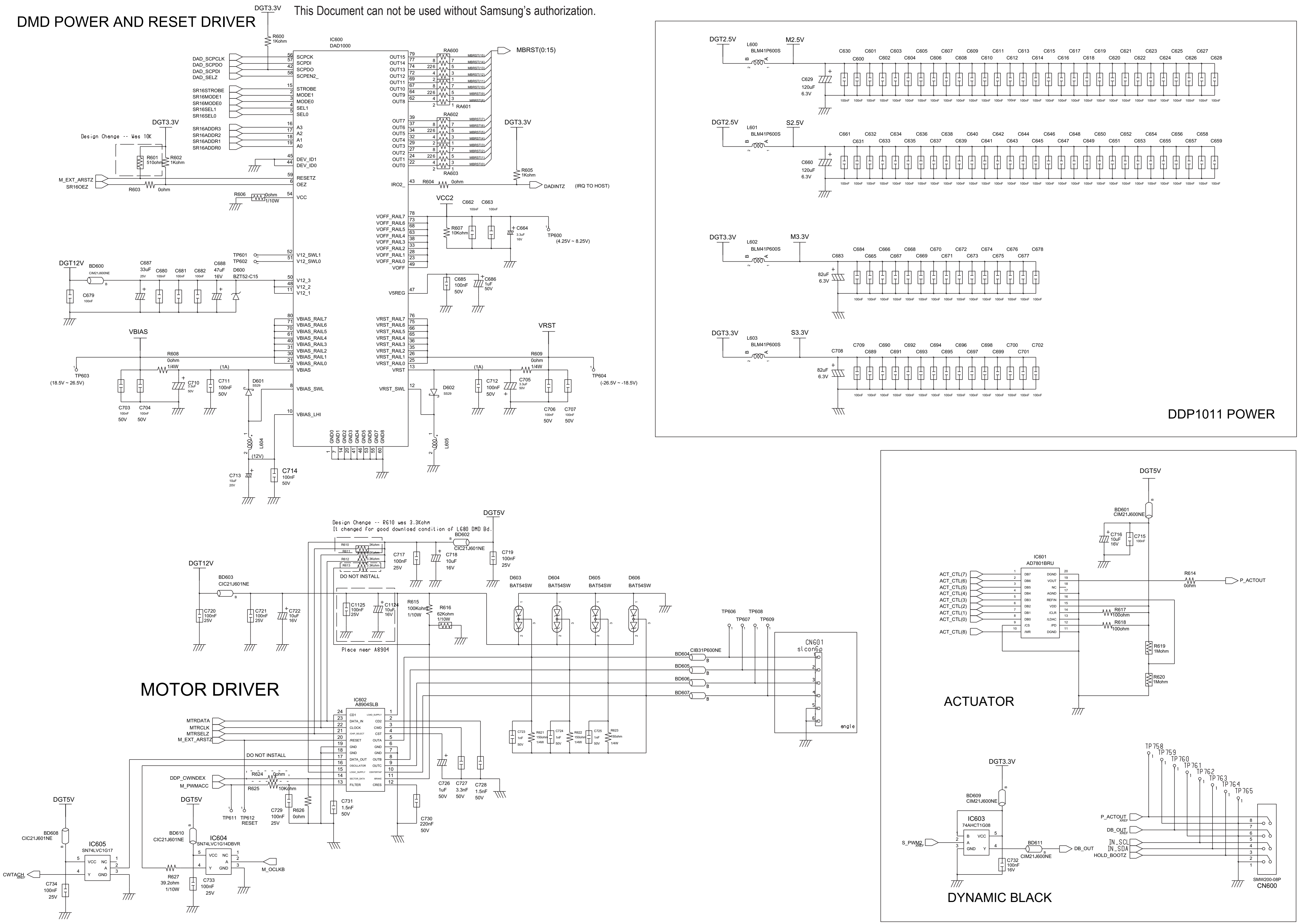
(RSL : RQ(0:7), RQA(0:8), RQB(0:8), RD_CTM, RD_CTMN, RD_CFM, RD_CFMN, RD_CMD, RD_SCK)

(50 OHM IMPEDANCE : RD_REFCLK, RD_SCLKN, RD_PCLKN)

(ALL RSL SIGNALS, SCK, CMD, DIFF CLOCK PAIRS MUST HAVE MATCHED ELECTRICAL LENGTH)


(PLACE NEAR DDP1010)
R539
110ohm
C526
100nF
C527
100nF
S_VREF_ASIC
(25MILS, OR WIDER)
DGT3.3V
IC503
FAN1117AD-1.8
VIN
VOUT
ADJ
C544
10uF
16V
C545
82uF
6.3V
(50MILS, OR WIDER)
SRDRAM1.8V
C530
C531
C532
C533
C534
C535
C536
C537
C538
C539
C540
C541
C542
100nF
R540
33ohm
(10MILS, OR NARROWER)
R541
118ohm
C543
100nF
S_VREF_RDRAM

## 10-3-6 DMD-6


This Document can not be used without Samsung's authorization.
DMD POWER AND RESET DRIVER
IC600
DAD1000
DGT3.3V
R600
1Kohm
DAD_SCPCLK
DAD_SCPDO
DAD_SCPDI
DAD_SELZ
SR16STROBE
SR16MODE1
SR16MODE0
SR16SEL1
SR16SEL0
SR16ADDR3
SR16ADDR2
SR16ADDR1
SR16ADDR0
Design Change -- Was 10K
R601
510ohm
R602
1Kohm
M_EXT_ARSTZ
SR16OEZ
R603
0ohm
R606
0ohm
1/10W
SCPCK
SCPDI
SCPDO
SCPEN2_
STROBE
MODE1
MODE0
SEL1
SEL0
A3
A2
A1
A0
DEV_ID1
DEV_ID0
RESETZ
OEZ
VCC
V12_SWL1
V12_SWL0
V12_3
V12_2
V12_1
VBIAS_RAIL7
VBIAS_RAIL6
VBIAS_RAIL5
VBIAS_RAIL4
VBIAS_RAIL3
VBIAS_RAIL2
VBIAS_RAIL1
VBIAS_RAIL0
VBIAS
VBIAS_SWL
VBIAS_LHI
OUT15
OUT14
OUT13
OUT12
OUT11
OUT10
OUT9
OUT8
OUT7
OUT6
OUT5
OUT4
OUT3
OUT2
OUT1
OUT0
IRQ2_
VOFF_RAIL7
VOFF_RAIL6
VOFF_RAIL5
VOFF_RAIL4
VOFF_RAIL3
VOFF_RAIL2
VOFF_RAIL1
VOFF_RAIL0
VOFF
V5REG
VRST_RAIL7
VRST_RAIL6
VRST_RAIL5
VRST_RAIL4
VRST_RAIL3
VRST_RAIL2
VRST_RAIL1
VRST_RAIL0
VRST
VRST_SWL
RA600
RA601
RA602
RA603
MBRST(0:15)
R605
1Kohm
R604
0ohm
DADINTZ
(IRQ TO HOST)
VCC2
C662
C663
R607
10Kohm
C664
TP600
(4.25V ~ 8.25V)
C685
100nF
50V
C686
1uF
50V
DGT12V
BD600
TP601
TP602
C687
33uF
25V
C680
C681
C682
C688
47uF
16V
D600
BZT52-C15
C679
VBIAS
VRST
R608
0ohm
1/4W
(1A)
TP603
(18.5V ~ 26.5V)
C703
C704
50V
C710
C711
100nF
50V
D601
D602
R609
0ohm
1/4W
C712
100nF
50V
C705
C706
C707
TP604
(-26.5V ~ -18.5V)
L604
L605
(12V)
C713
C714
100nF
50V
GND0
GND1
GND2
GND3
GND4
GND5
GND6
GND7
GND8
DDP1011 POWER
DGT2.5V
L600
BLM41P600S
M2.5V
C629
120uF
6.3V
C630
C600
C601
C602
C603
C604
C605
C606
C607
C608
C609
C610
C611
C612
C613
C614
C615
C616
C617
C618
C619
C620
C621
C622
C623
C624
C625
C626
C627
C628
L601
S2.5V
C660
120uF
6.3V
C661
C631
C632
C633
C634
C635
C636
C637
C638
C639
C640
C641
C642
C643
C644
C645
C646
C647
C648
C649
C650
C651
C652
C653
C654
C655
C656
C657
C658
C659
DGT3.3V
L602
M3.3V
C683
82uF
6.3V
C684
C665
C666
C667
C668
C669
C670
C671
C672
C673
C674
C675
C676
C677
C678
L603
S3.3V
C708
C709
C689
C690
C691
C692
C693
C694
C695
C696
C697
C698
C699
C700
C701
C702
100nF
MOTOR DRIVER
Design Change -- R610 was 3.3Kohm
It changed for good download condition of L680 DMD Bd.
DGT5V
BD602
CIC21J601NE
R610
R611
R612
R613
DO NOT INSTALL
C717
100nF
25V
C718
10uF
16V
C719
100nF
25V
DGT12V
BD603
CIC21J601NE
C720
100nF
25V
C721
100nF
25V
C722
10uF
16V
C1125
100nF
25V
C1124
10uF
16V
Place near A8904
R615
100Kohm
1/10W
R616
62Kohm
1/10W
D603
BAT54SW
D604
BAT54SW
D605
BAT54SW
D606
BAT54SW
TP606
TP607
TP608
TP609
CN601
slcon6p
angle
BD604
BD605
BD606
BD607
CIB31P600NE
IC602
A8904SLB
MTRDATA
MTRCLK
MTRSELZ
M_EXT_ARSTZ
DDP_CWINDEX
M_PWMACC
DO NOT INSTALL
R624
0ohm
R625
10Kohm
C723
C724
C725
R621
R622
R623
C726
1uF
50V
C727
3.3nF
50V
C728
1.5nF
50V
C729
100nF
25V
R626
0ohm
C731
1.5nF
50V
C730
220nF
50V
TP611
TP612
RESET
DGT5V
BD608
CIC21J601NE
IC605
SN74LVC1G17
CWTACH
C734
100nF
25V
BD610
CIC21J601NE
IC604
SN74LVC1G14DBVR
M_OCLKB
R627
39.2ohm
1/10W
C733
100nF
25V
ACTUATOR
DGT5V
BD601
CIM21J600NE
C716
10uF
16V
C715
IC601
AD7801BRU
ACT_CTL(7)
ACT_CTL(6)
ACT_CTL(5)
ACT_CTL(4)
ACT_CTL(3)
ACT_CTL(2)
ACT_CTL(1)
ACT_CTL(0)
ACT_CTL(8)
R614
0ohm
P_ACTOUT
R617
100ohm
R618
100ohm
R619
1Mohm
R620
1Mohm
DYNAMIC BLACK
DGT3.3V
BD609
CIM21J600NE
IC603
74AHCT1G08
S_PWM2
BD611
CIM21J600NE
DB_OUT
C732
100nF
16V
TP758
TP759
TP760
TP761
TP762
TP763
TP764
TP765
P_ACTOUT
DB_OUT
IN_SCL
IN_SDA
HOLD_BOOTZ
SMW200-08P
CN600

## 10-3-7 DMD-7

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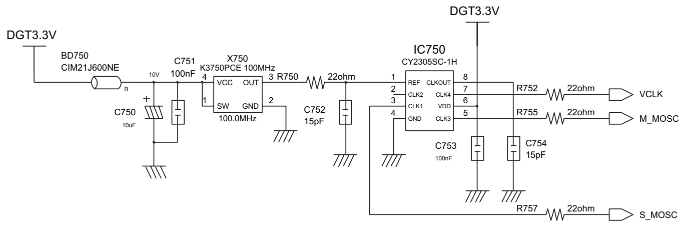
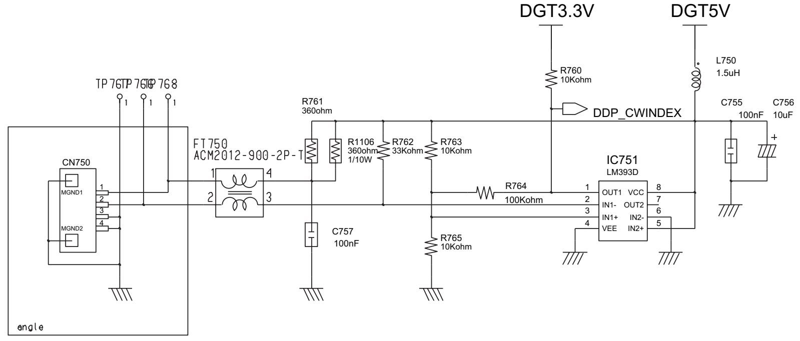
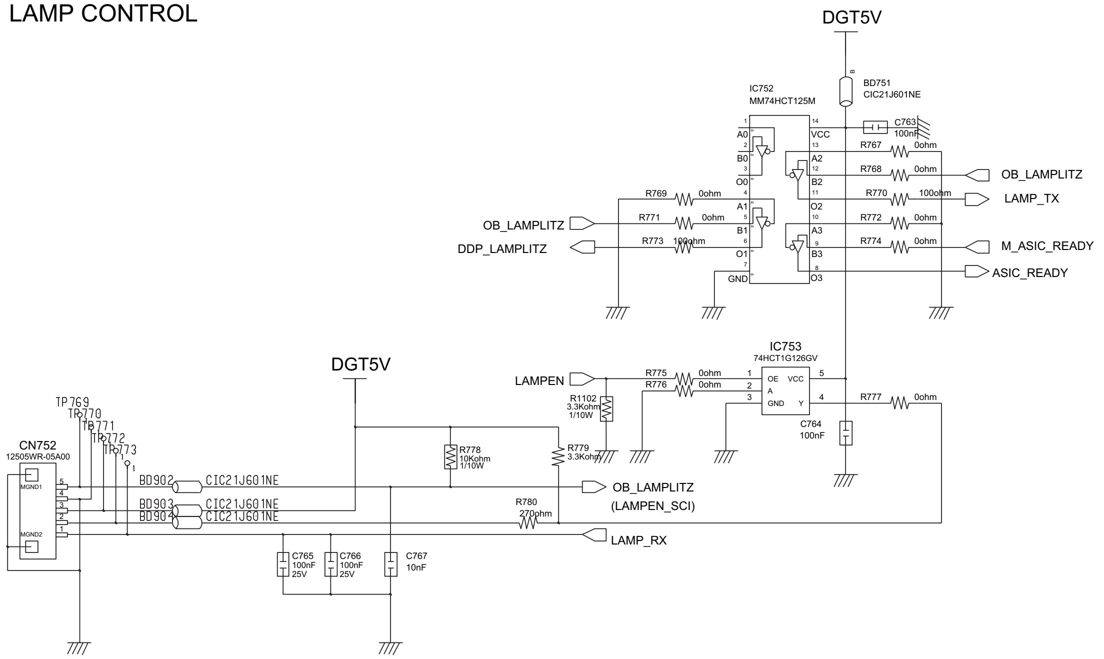
### OSCILLATOR CLOCK


DGT3.3V
BD750
CIM21J600NE
C751
100nF
X750
K3750PCE 100MHz
C750
10uF
VCC OUT
SW GND
100.0MHz
R750
22ohm
C752
15pF
DGT3.3V
IC750
CY2305SC-1H
REF CLKOUT
CLK2 CLK4
CLK1 VDD
GND CLK3
C753
100nF
R752
22ohm
VCLK
R755
22ohm
M_MOSC
C754
15pF
R757
22ohm
S_MOSC

### COLOR WHEEL SENSOR DETECTION

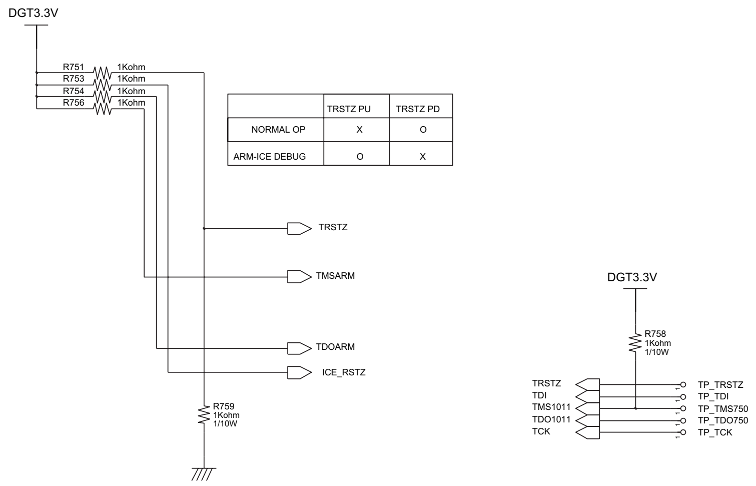

DGT3.3V
DGT5V
TP767
TP766
TP768
CN750
MGND1
MGND2
engle
FT750
ACM2012-900-2P-T
R761
360ohm
R1106
360ohm
1/10W
R762
33Kohm
R763
10Kohm
R760
10Kohm
DDP_CWINDEX
L750
1.5uH
C755
100nF
C756
10uF
R764
100Kohm
IC751
LM393D
OUT1 VCC
IN1- OUT2
IN1+ IN2-
VEE IN2+
C757
100nF
R765
10Kohm

### LAMP CONTROL


DGT5V
IC752
MM74HCT125M
BD751
CIC21J601NE
C763
100nF
A0
B0
O0
A1
B1
O1
GND
VCC
A2
B2
O2
A3
B3
O3
R767 0ohm
R768 0ohm
OB_LAMPLITZ
R770 100ohm
LAMP_TX
R772 0ohm
R774 0ohm
M_ASIC_READY
ASIC_READY
R769 0ohm
R771 0ohm
R773 100ohm
OB_LAMPLITZ
DDP_LAMPLITZ
DGT5V
IC753
74HCT1G126GV
LAMPEN
R775 0ohm
R776 0ohm
OE VCC
A
GND Y
R777 0ohm
R1102
3.3Kohm
1/10W
C764
100nF
TP769
TP770
TP771
TP772
TP773
CN752
12505WR-05A00
MGND1
MGND2
BD902 CIC21J601NE
BD903 CIC21J601NE
BD904 CIC21J601NE
R778
10Kohm
1/10W
R779
3.3Kohm
OB_LAMPLITZ
(LAMPEN_SCI)
R780
270ohm
LAMP_RX
C765
100nF
25V
C766
100nF
25V
C767
10nF

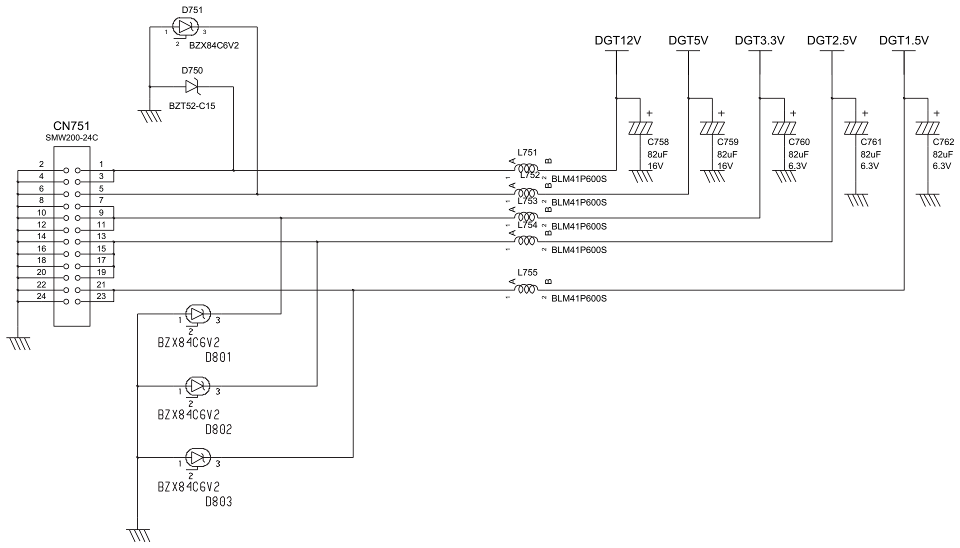
For Ballaster by Philips/OSRAM

### ARM ICE I/F

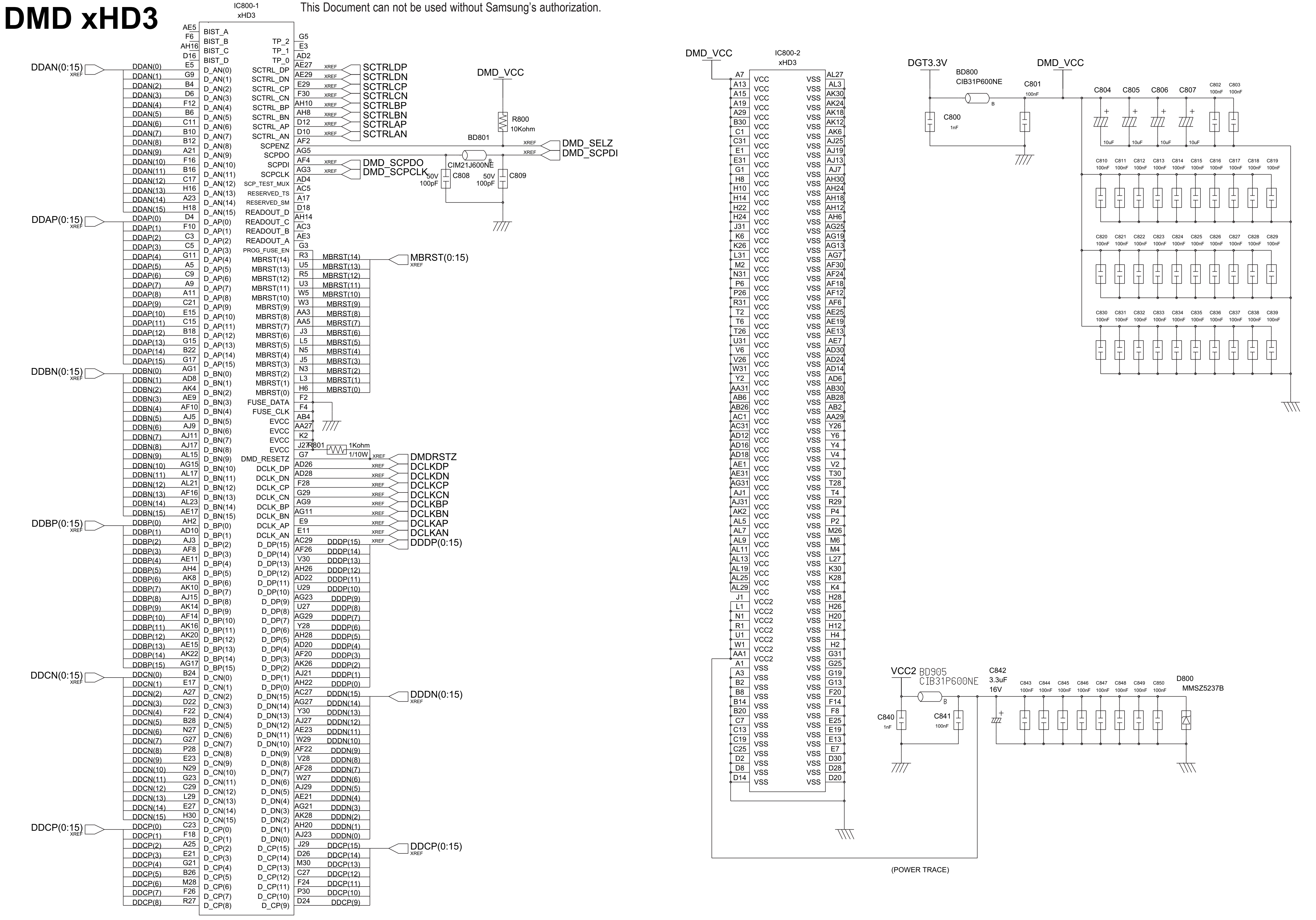

DGT3.3V
R751 1Kohm
R753 1Kohm
R754 1Kohm
R756 1Kohm
TRSTZ
TMSARM
TDOARM
ICE_RSTZ
R759
1Kohm
1/10W
DGT3.3V
R758
1Kohm
1/10W
TRSTZ
TDI
TMS1011
TDO1011
TCK
TP_TRSTZ
TP_TDI
TP_TMS750
TP_TDO750
TP_TCK

|  | TRSTZ PU | TRSTZ PD |
|---|---|---|
| NORMAL OP | X | O |
| ARM-ICE DEBUG | O | X |

### Main Power


D751
BZX84C6V2
D750
BZT52-C15
CN751
SMW200-24C
DGT12V
DGT5V
DGT3.3V
DGT2.5V
DGT1.5V
C758
82uF
16V
C759
82uF
16V
C760
82uF
6.3V
C761
82uF
6.3V
C762
82uF
6.3V
L751
L752 BLM41P600S
L753 BLM41P600S
L754 BLM41P600S
BLM41P600S
L755
BLM41P600S
BZX84C6V2
D801
BZX84C6V2
D802
BZX84C6V2
D803

## 10-3-8 DMD-8



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DMD xHD3
IC800-1
xHD3
IC800-2
xHD3
DDAN(0:15)
DDAP(0:15)
DDBN(0:15)
DDBP(0:15)
DDCN(0:15)
DDCP(0:15)
XREF
BIST_A
BIST_B
BIST_C
BIST_D
TP_2
TP_1
TP_0
SCTRL_DP
SCTRL_DN
SCTRL_CP
SCTRL_CN
SCTRL_BP
SCTRL_BN
SCTRL_AP
SCTRL_AN
SCPENZ
SCPDO
SCPDI
SCPCLK
SCP_TEST_MUX
RESERVED_TS
RESERVED_SM
READOUT_D
READOUT_C
READOUT_B
READOUT_A
PROG_FUSE_EN
MBRST(14)…MBRST(0)
FUSE_DATA
FUSE_CLK
EVCC
DMD_RESETZ
DCLK_DP
DCLK_DN
DCLK_CP
DCLK_CN
DCLK_BP
DCLK_BN
DCLK_AP
DCLK_AN
D_DP(15)…D_DP(0)
D_DN(15)…D_DN(0)
D_CP(15)…D_CP(9)
SCTRLDP
SCTRLDN
SCTRLCP
SCTRLCN
SCTRLBP
SCTRLBN
SCTRLAP
SCTRLAN
DMD_VCC
R800
10Kohm
BD801
CIM21J600NE
DMD_SELZ
DMD_SCPDI
DMD_SCPDO
DMD_SCPCLK
C808
50V
100pF
C809
MBRST(0:15)
R801
1Kohm
1/10W
DMDRSTZ
DCLKDP
DCLKDN
DCLKCP
DCLKCN
DCLKBP
DCLKBN
DCLKAP
DCLKAN
DDDP(0:15)
DDDN(0:15)
DDCP(0:15)
VCC
VCC2
VSS
DGT3.3V
BD800
CIB31P600NE
C800
1nF
C801
100nF
C802
C803
C804
C805
C806
C807
10uF
C810 – C819
C820 – C829
C830 – C839
100nF
VCC2
BD905
CIB31P600NE
C840
1nF
C841
100nF
C842
3.3uF
16V
C843 – C850
100nF
D800
MMSZ5237B
(POWER TRACE)

## 10-3-9 DMD-9

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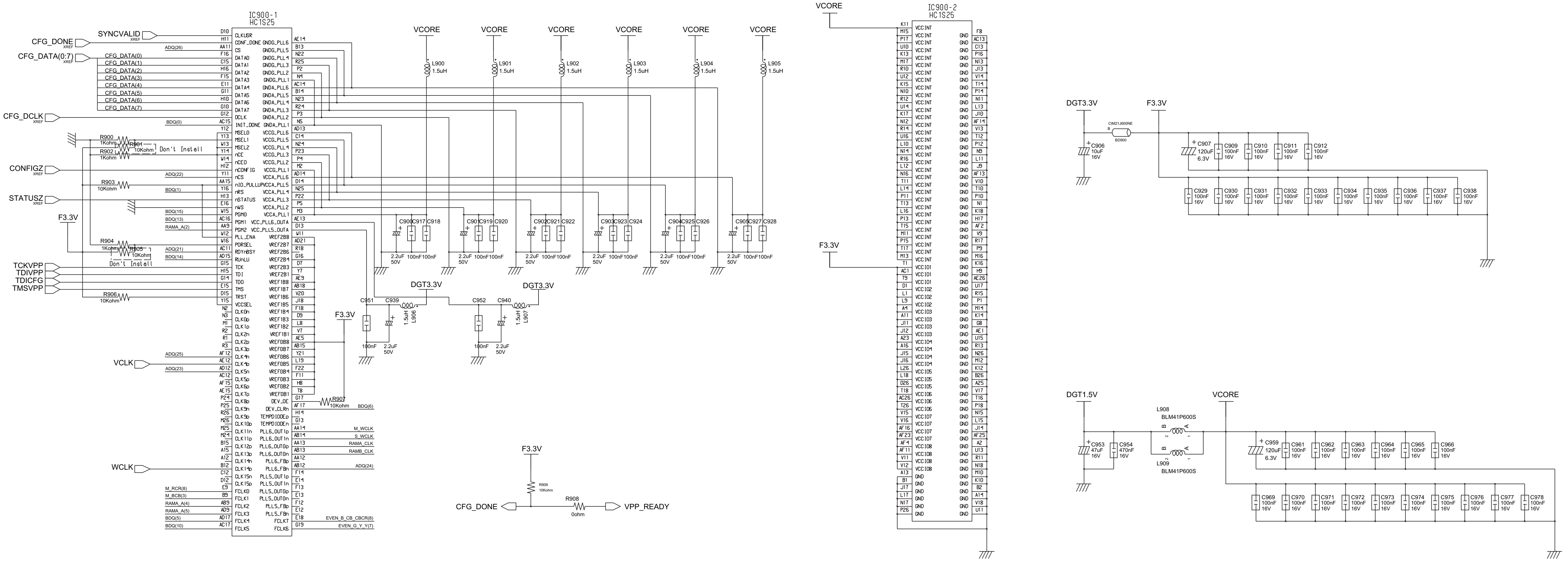
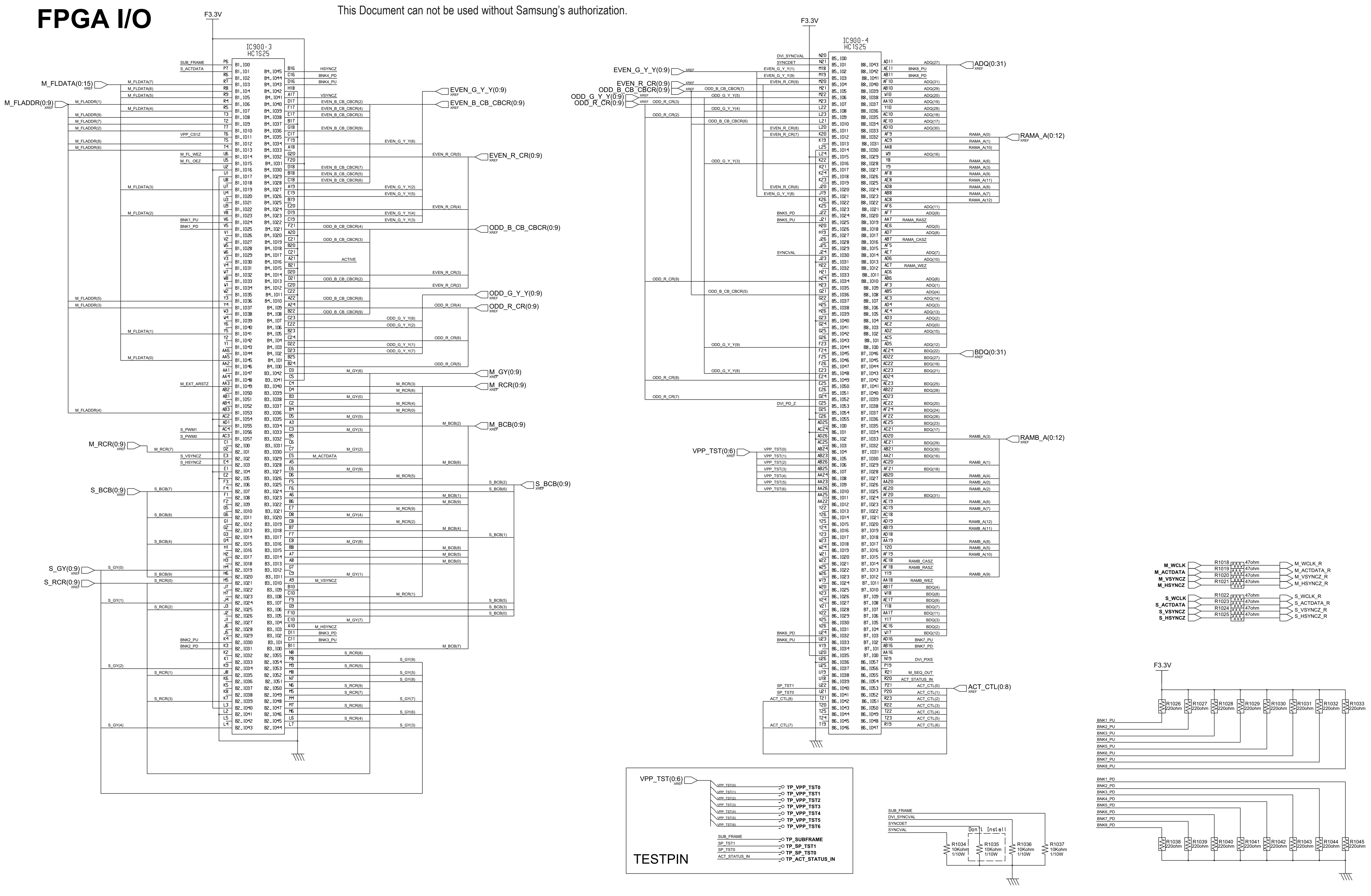
# FPGA CFG / POWER


IC900-1
HC1S25
SYNCVALID
CFG_DONE
CFG_DATA(0:7)
CFG_DATA(0)
CFG_DATA(1)
CFG_DATA(2)
CFG_DATA(3)
CFG_DATA(4)
CFG_DATA(5)
CFG_DATA(6)
CFG_DATA(7)
CFG_DCLK
CONFIGZ
STATUSZ
F3.3V
TCKVPP
TDIVPP
TDICFG
TMSVPP
VCLK
WCLK
XREF
ADQ(26)
BDQ(0)
ADQ(22)
BDQ(1)
BDQ(15)
BDQ(13)
RAMA_A(2)
ADQ(21)
BDQ(14)
ADQ(25)
ADQ(23)
M_RCR(8)
M_BCB(3)
RAMA_A(4)
RAMA_A(5)
BDQ(5)
BDQ(10)
R900 1Kohm
R901 10Kohm
Don't Install
R902 1Kohm
R903 10Kohm
R904 1Kohm
R905 10Kohm
R906 10Kohm
R907 10Kohm
BDQ(6)
M_WCLK
S_WCLK
RAMA_CLK
RAMB_CLK
ADQ(24)
EVEN_B_CB_CBCR(8)
EVEN_G_Y_Y(7)
VCORE
L900 1.5uH
L901 1.5uH
L902 1.5uH
L903 1.5uH
L904 1.5uH
L905 1.5uH
C900 C917 C918
C901 C919 C920
C902 C921 C922
C903 C923 C924
C904 C925 C926
C905 C927 C928
2.2uF 50V
100nF
DGT3.3V
C951 C939
L906 1.5uH
C952 C940
L907 1.5uH
100nF
2.2uF 50V
F3.3V
R909 10Kohm
R908 0ohm
CFG_DONE
VPP_READY
IC900-2
HC1S25
VCCINT
VCCIO1
VCCIO2
VCCIO3
VCCIO4
VCCIO5
VCCIO6
VCCIO7
VCCIO8
GND
DGT3.3V
F3.3V
CIM21J600NE
BD900
C906 10uF 16V
C907 120uF 6.3V
C909 C910 C911 C912 100nF 16V
C929 C930 C931 C932 C933 C934 C935 C936 C937 C938 100nF 16V
DGT1.5V
VCORE
L908 BLM41P600S
L909 BLM41P600S
C953 47uF 16V
C954 470nF 16V
C959 120uF 6.3V
C961 C962 C963 C964 C965 C966 100nF 16V
C969 C970 C971 C972 C973 C974 C975 C976 C977 C978 100nF 16V

## 10-3-10 DMD-10


FPGA I/O
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F3.3V
IC900-3
HC1S25
IC900-4
HC1S25
M_FLDATA(0:15)
M_FLADDR(0:9)
M_RCR(0:9)
S_BCB(0:9)
S_GY(0:9)
S_RCR(0:9)
EVEN_G_Y_Y(0:9)
EVEN_B_CB_CBCR(0:9)
EVEN_R_CR(0:9)
ODD_B_CB_CBCR(0:9)
ODD_G_Y_Y(0:9)
ODD_R_CR(0:9)
M_GY(0:9)
M_RCR(0:9)
M_BCB(0:9)
S_BCB(0:9)
ADQ(0:31)
RAMA_A(0:12)
BDQ(0:31)
RAMB_A(0:12)
VPP_TST(0:6)
ACT_CTL(0:8)
XREF
M_WCLK
M_ACTDATA
M_VSYNCZ
M_HSYNCZ
R1018
R1019
R1020
R1021
47ohm
M_WCLK_R
M_ACTDATA_R
M_VSYNCZ_R
M_HSYNCZ_R
S_WCLK
S_ACTDATA
S_VSYNCZ
S_HSYNCZ
R1022
R1023
R1024
R1025
S_WCLK_R
S_ACTDATA_R
S_VSYNCZ_R
S_HSYNCZ_R
R1026
R1027
R1028
R1029
R1030
R1031
R1032
R1033
220ohm
BNK1_PU
BNK2_PU
BNK3_PU
BNK4_PU
BNK5_PU
BNK6_PU
BNK7_PU
BNK8_PU
BNK1_PD
BNK2_PD
BNK3_PD
BNK4_PD
BNK5_PD
BNK6_PD
BNK7_PD
BNK8_PD
R1038
R1039
R1040
R1041
R1042
R1043
R1044
R1045
SUB_FRAME
DVI_SYNCVAL
SYNCDET
SYNCVAL
Don't Install
R1034
R1035
R1036
R1037
10Kohm
1/10W
TP_VPP_TST0
TP_VPP_TST1
TP_VPP_TST2
TP_VPP_TST3
TP_VPP_TST4
TP_VPP_TST5
TP_VPP_TST6
TP_SUBFRAME
TP_SP_TST1
TP_SP_TST0
TP_ACT_STATUS_IN
SP_TST1
SP_TST0
ACT_STATUS_IN
TESTPIN

## 10-3-11 DMD-11

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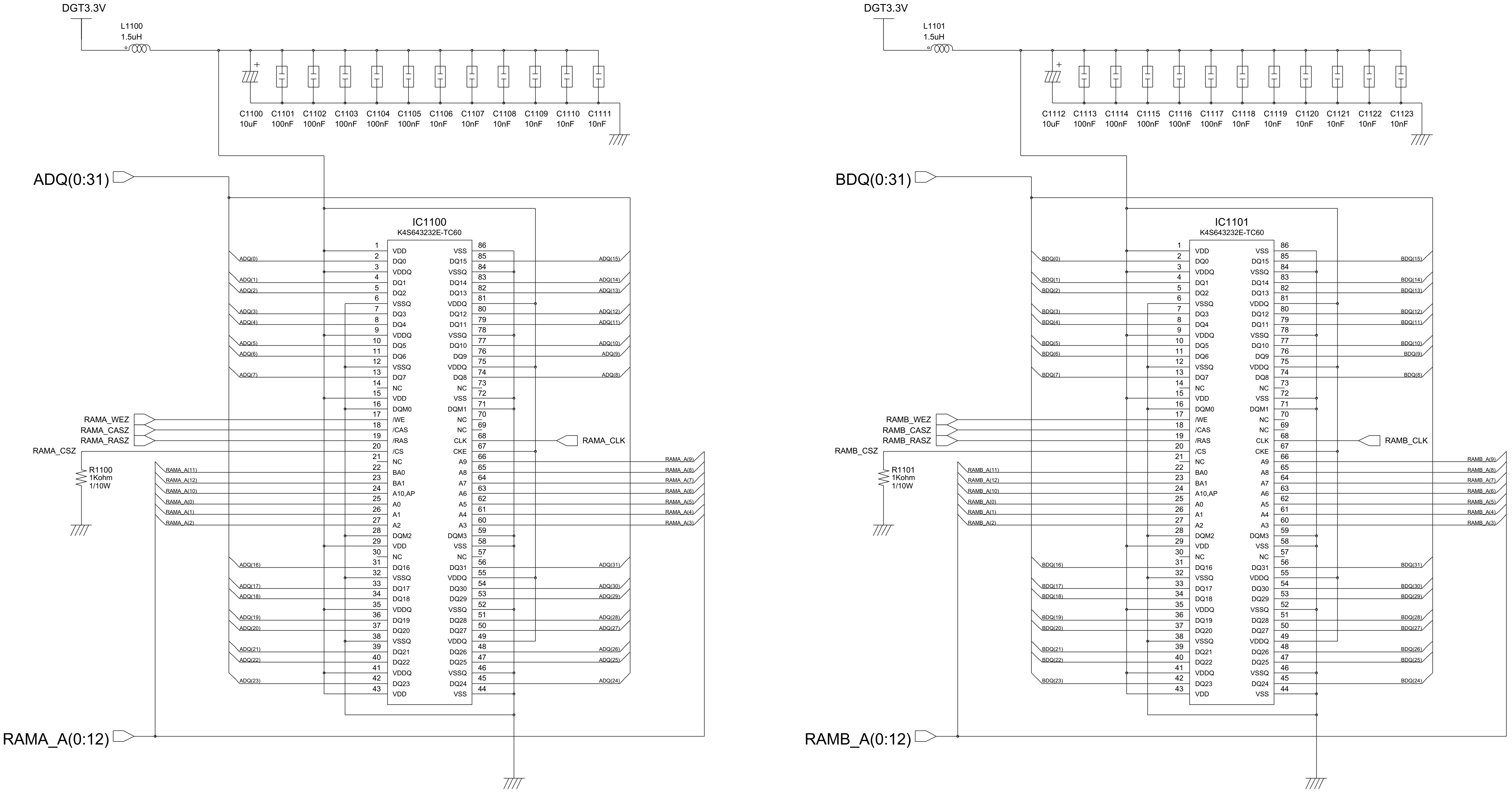
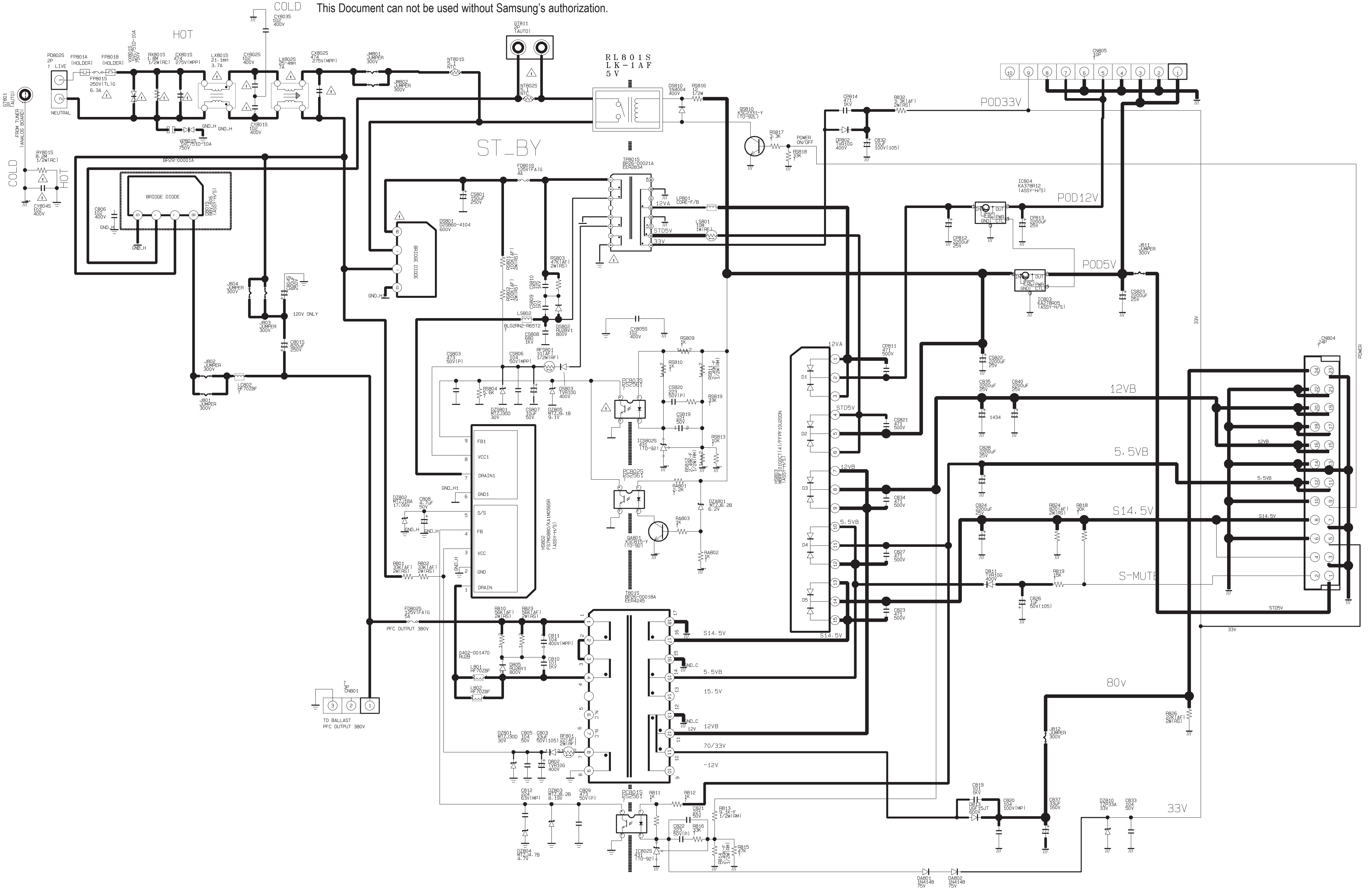
# SDRAM


DGT3.3V
L1100
1.5uH
C1100 10uF
C1101 100nF
C1102 100nF
C1103 100nF
C1104 100nF
C1105 100nF
C1106 10nF
C1107 10nF
C1108 10nF
C1109 10nF
C1110 10nF
C1111 10nF
ADQ(0:31)
IC1100
K4S643232E-TC60
RAMA_WEZ
RAMA_CASZ
RAMA_RASZ
RAMA_CSZ
RAMA_CLK
R1100
1Kohm
1/10W
RAMA_A(0:12)
DGT3.3V
L1101
1.5uH
C1112 10uF
C1113 100nF
C1114 100nF
C1115 100nF
C1116 100nF
C1117 100nF
C1118 10nF
C1119 10nF
C1120 10nF
C1121 10nF
C1122 10nF
C1123 10nF
BDQ(0:31)
IC1101
K4S643232E-TC60
RAMB_WEZ
RAMB_CASZ
RAMB_RASZ
RAMB_CSZ
RAMB_CLK
R1101
1Kohm
1/10W
RAMB_A(0:12)
VDD
DQ0
VDDQ
DQ1
DQ2
VSSQ
DQ3
DQ4
VDDQ
DQ5
DQ6
VSSQ
DQ7
NC
VDD
DQM0
/WE
/CAS
/RAS
/CS
NC
BA0
BA1
A10,AP
A0
A1
A2
DQM2
VDD
NC
DQ16
VSSQ
DQ17
DQ18
VDDQ
DQ19
DQ20
VSSQ
DQ21
DQ22
VDDQ
DQ23
VDD
VSS
DQ15
VSSQ
DQ14
DQ13
VDDQ
DQ12
DQ11
VSSQ
DQ10
DQ9
VDDQ
DQ8
NC
VSS
DQM1
NC
NC
CLK
CKE
A9
A8
A7
A6
A5
A4
A3
DQM3
VSS
NC
DQ31
VDDQ
DQ30
DQ29
VSSQ
DQ28
DQ27
VDDQ
DQ26
DQ25
VSSQ
DQ24
VSS

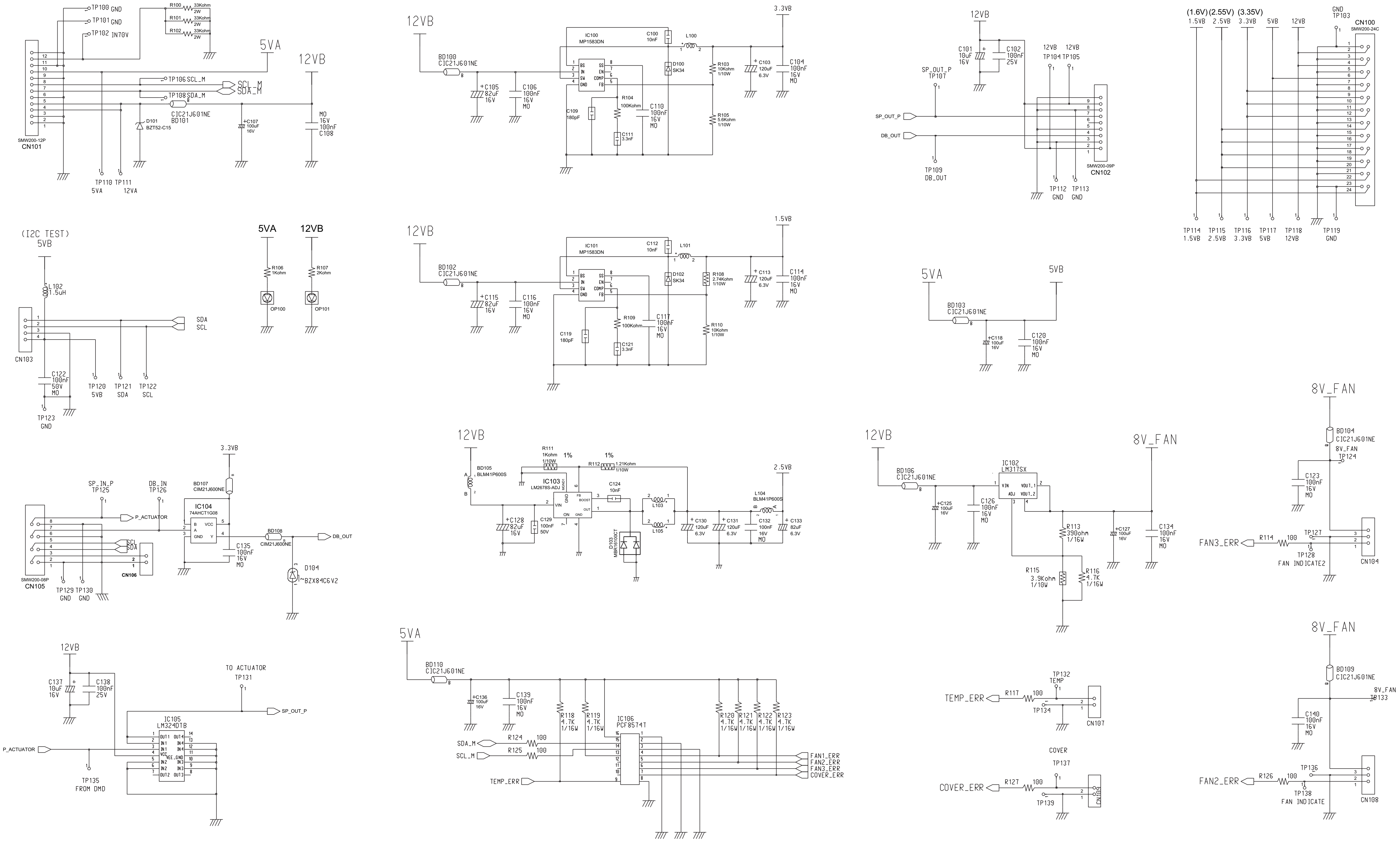
## 10-4 Power

This Document can not be used without Samsung's authorization.


COLD
HOT
COLD
HOT
RL801S
LK-1AF
5V
ST_BY
BRIDGE DIODE
BRIDGE DIODE
120V ONLY
FROM TUNER (ANALOG BOARD)
NEUTRAL
LIVE
POD33V
POD12V
POD5V
12VB
5.5VB
S14.5V
S-MUTE
80V
33V
12VA
STD5V
33V
S14.5V
5.5VB
15.5V
12VB
70/33V
-12V
FB1
VCC1
DRAIN1
GND1
S/S
FB
VCC
GND
DRAIN
GND_H
TO BALLAST
PFC OUTPUT 380V
PFC OUTPUT 380V
CN801
CN804
CN805
POWER
POWER ON/OFF
12VB
5.5VB
S14.5V
STD5V
33V

## 10-5 Detect

This Document can not be used without Samsung's authorization.


TP100 GND
TP101 GND
TP102 IN70V
R100 33Kohm 2W
R101 33Kohm 2W
R102 33Kohm 2W
5VA
12VB
TP106 SCL_M
TP108 SDA_M
SCL_M
SDA_M
CIC21J601NE BD101
D101 BZT52-C15
C107 100uF 16V
MO 16V 100nF C108
SMW200-12P CN101
TP110 5VA
TP111 12VA
12VB
BD100 CIC21J601NE
C105 82uF 16V
C106 100nF 16V MO
IC100 MP1583DN
C100 10nF
L100
3.3VB
D100 SK34
R103 10Kohm 1/10W
C103 120uF 6.3V
C104 100nF 16V MO
R104 100Kohm
C110 100nF 16V MO
C109 180pF
C111 3.3nF
R105 5.6Kohm 1/10W
12VB
C101 10uF 16V
C102 100nF 25V
12VB TP104
12VB TP105
SP_OUT_P TP107
SP_OUT_P
DB_OUT
TP109 DB_OUT
SMW200-09P CN102
TP112 GND
TP113 GND
(1.6V) 1.5VB
(2.55V) 2.5VB
(3.35V) 3.3VB
5VB
12VB
GND TP103
CN100 SMW200-24C
TP114 1.5VB
TP115 2.5VB
TP116 3.3VB
TP117 5VB
TP118 12VB
TP119 GND
(I2C TEST) 5VB
L102 1.5uH
SDA
SCL
CN103
C122 100nF 50V MO
TP120 5VB
TP121 SDA
TP122 SCL
TP123 GND
5VA
12VB
R106 1Kohm
R107 2Kohm
OP100
OP101
12VB
BD102 CIC21J601NE
C115 82uF 16V
C116 100nF 16V MO
IC101 MP1583DN
C112 10nF
L101
1.5VB
D102 SK34
R108 2.74Kohm 1/10W
C113 120uF 6.3V
C114 100nF 16V MO
R109 100Kohm
C117 100nF 16V MO
C119 180pF
C121 3.3nF
R110 10Kohm 1/10W
5VA
5VB
BD103 CIC21J601NE
C118 100uF 16V
C120 100nF 16V MO
3.3VB
SP_IN_P TP125
DB_IN TP126
BD107 CIM21J600NE
IC104 74AHCT1G08
P_ACTUATOR
BD108 CIM21J600NE
DB_OUT
C135 100nF 16V MO
D104 BZX84C6V2
SCL
SDA
CN106
SMW200-08P CN105
TP129 GND
TP130 GND
12VB
BD105 BLM41P600S
R111 1Kohm 1/10W 1%
R112 1.21Kohm 1/10W 1%
IC103 LM2678S-ADJ
C124 10nF
L103
L105
2.5VB
L104 BLM41P600S
C128 82uF 16V
C129 100nF 50V
D103 MBR1810OCT
C130 120uF 6.3V
C131 120uF 6.3V
C132 100nF 16V MO
C133 82uF 6.3V
12VB
BD106 CIC21J601NE
IC102 LM317SX
8V_FAN
C125 100uF 16V
C126 100nF 16V MO
R113 390ohm 1/16W
C127 100uF 16V
C134 100nF 16V MO
R115 3.9Kohm 1/10W
R116 4.7K 1/16W
8V_FAN
BD104 CIC21J601NE
8V_FAN TP124
C123 100nF 16V MO
FAN3_ERR
R114 100
TP127
TP128 FAN INDICATE2
CN104
12VB
C137 10uF 16V
C138 100nF 25V
TO ACTUATOR TP131
SP_OUT_P
IC105 LM324DTB
P_ACTUATOR
TP135 FROM DMD
5VA
BD110 CIC21J601NE
C136 100uF 16V
C139 100nF 16V MO
R118 4.7K 1/16W
R119 4.7K 1/16W
IC106 PCF8574T
R120 4.7K 1/16W
R121 4.7K 1/16W
R122 4.7K 1/16W
R123 4.7K 1/16W
R124 100
R125 100
SDA_M
SCL_M
TEMP_ERR
FAN1_ERR
FAN2_ERR
FAN3_ERR
COVER_ERR
TP132 TEMP
TEMP_ERR
R117 100
TP134
CN107
COVER
TP137
COVER_ERR
R127 100
TP139
CN109
8V_FAN
BD109 CIC21J601NE
8V_FAN TP133
C140 100nF 16V MO
FAN2_ERR
R126 100
TP136
TP138 FAN INDICATE
CN108

## 10-6 Power LED

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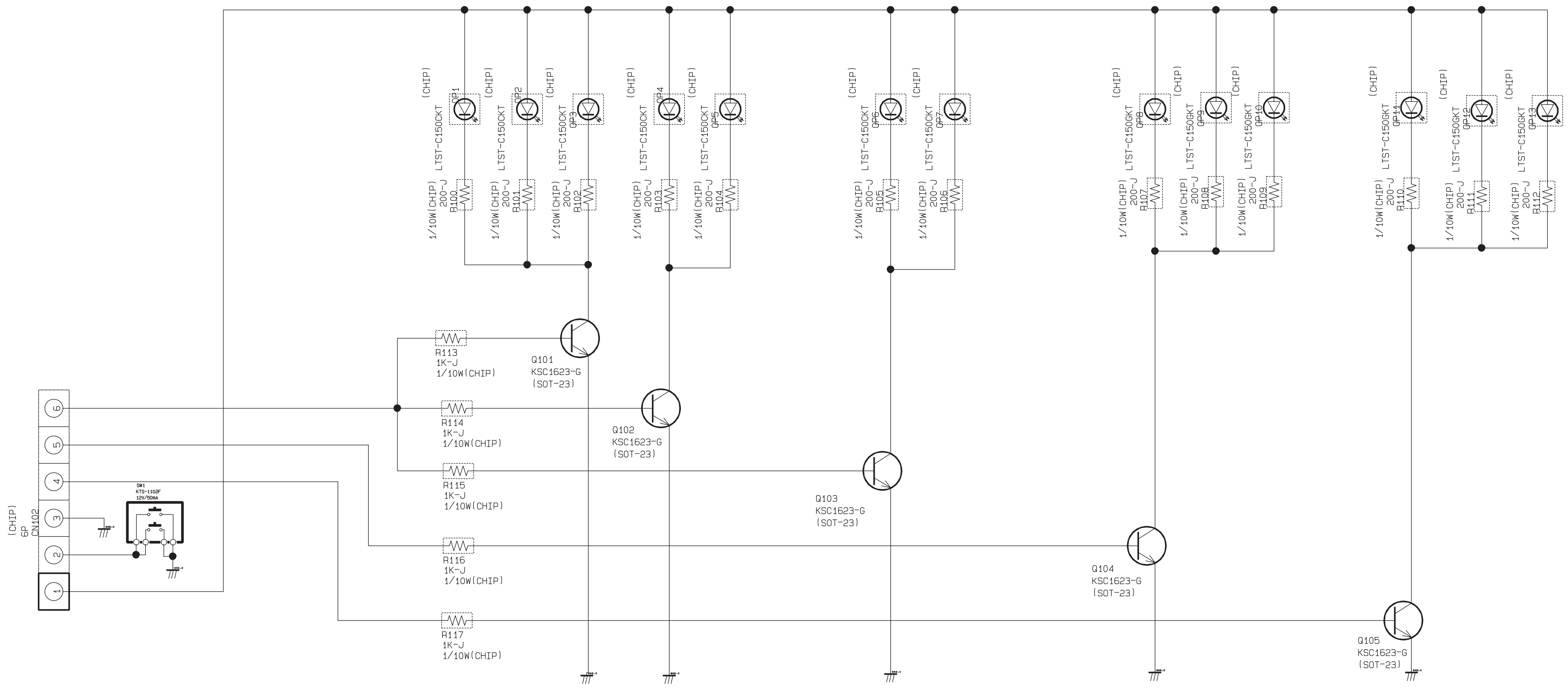
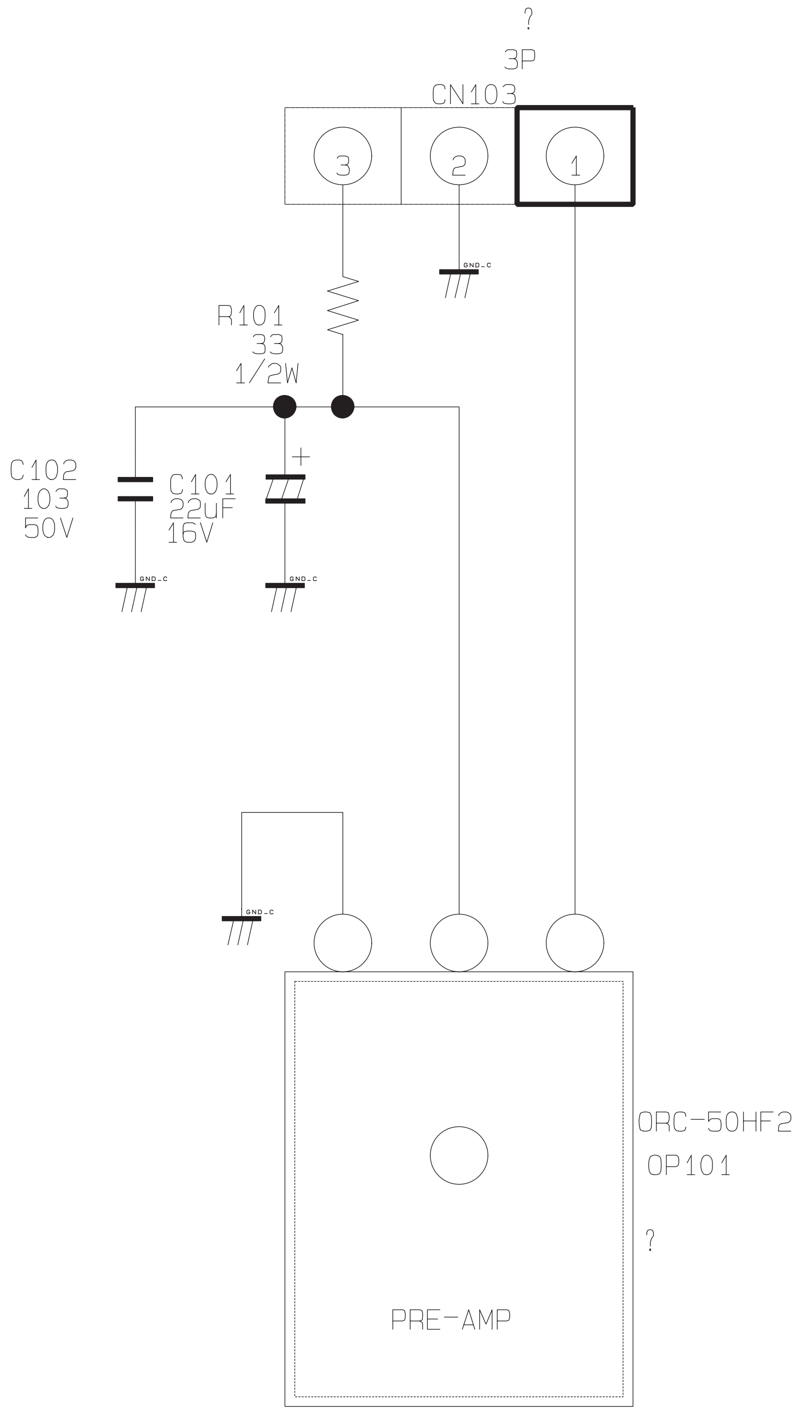

(CHIP)
LTST-C150CKT
OP1
OP2
OP3
OP4
OP5
OP6
OP7
LTST-C150GKT
OP8
OP9
OP10
OP11
OP12
OP13
1/10W(CHIP)
200-J
R100
R101
R102
R103
R104
R105
R106
R107
R108
R109
R110
R111
R112
R113
1K-J
1/10W(CHIP)
R114
R115
R116
R117
Q101
Q102
Q103
Q104
Q105
KSC1623-G
(SOT-23)
SW1
KTS-1102F
12V/50mA
GND_C
(CHIP)
6P
CN102
1
2
3
4
5
6

## 10-7 RMC

This Document can not be used without Samsung's authorization.

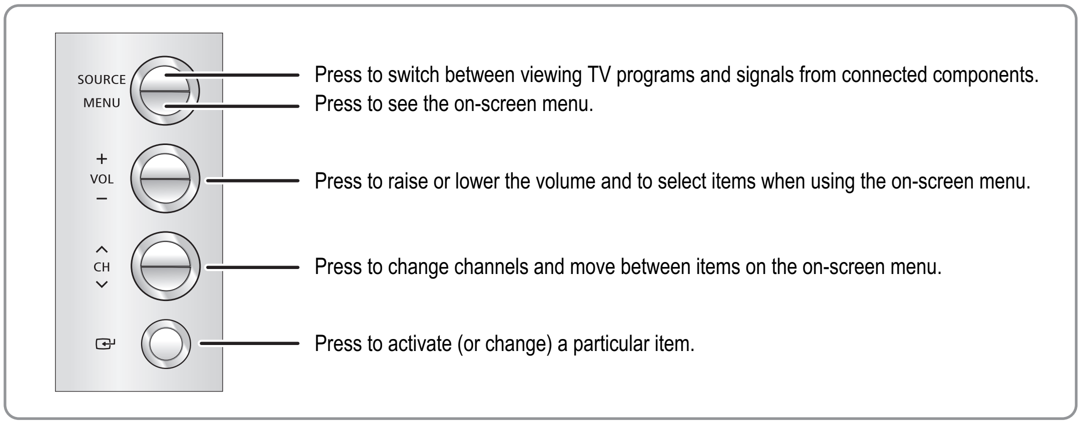

?
3P
CN103
3
2
1
GND_C
R101
33
1/2W
C102
103
50V
C101
22uF
16V
+
GND_C
GND_C
GND_C
ORC-50HF2
OP101
?
PRE-AMP

# 11. Operation Instruction & Installation

## 11-1 Product Features and Functions

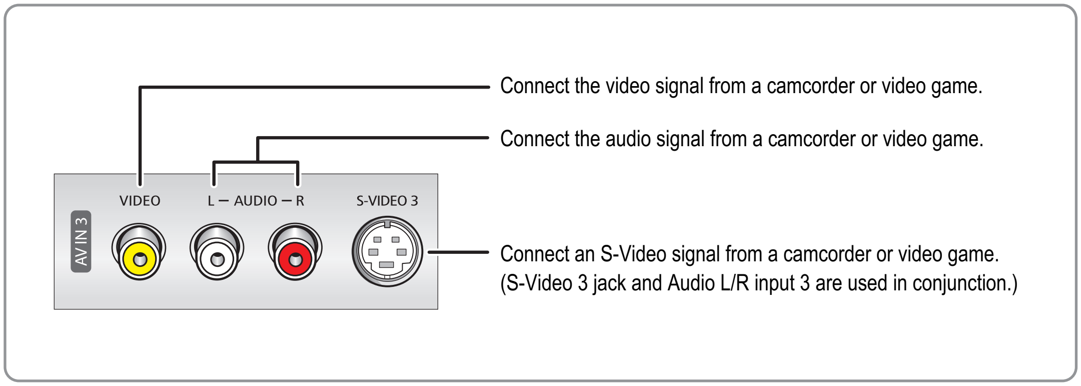
### 11-1-1 Right side buttons

The buttons on the right side panel control your TV's basic features, including the on-screen menu system.
To use the more advanced features, you must use the remote control.


SOURCE
MENU
+
VOL
−
CH
Press to switch between viewing TV programs and signals from connected components.
Press to see the on-screen menu.
Press to raise or lower the volume and to select items when using the on-screen menu.
Press to change channels and move between items on the on-screen menu.
Press to activate (or change) a particular item.

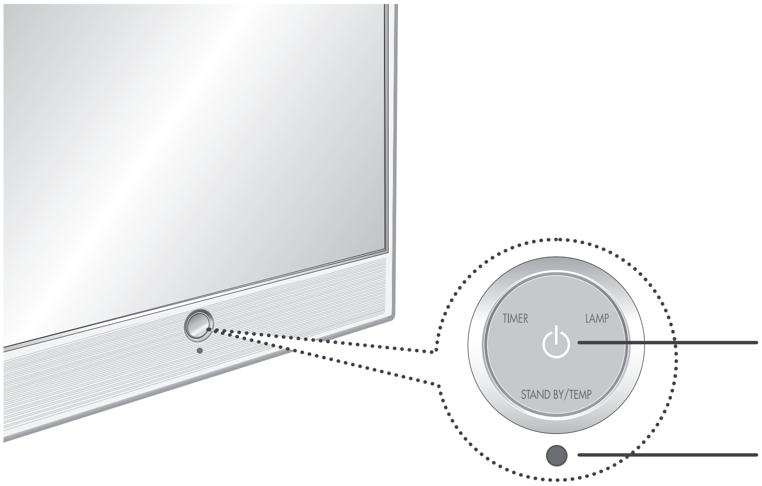
### 11-1-2 Side Panel Jacks

Use the right side panel jacks to connect a component that is used only occasionally (a camcorder or video game, for example).


Connect the video signal from a camcorder or video game.
Connect the audio signal from a camcorder or video game.
AV IN 3
VIDEO
L — AUDIO — R
S-VIDEO 3
Connect an S-Video signal from a camcorder or video game.
(S-Video 3 jack and Audio L/R input 3 are used in conjunction.)

## 11-1-3 Front Panel LED Indicators

The three lights on the front panel indicate the status of your TV.



**POWER**
Press to turn the TV on and off.

**Remote Control Sensor**
Aim the remote control towards this spot on the TV.

Indicator Light Key

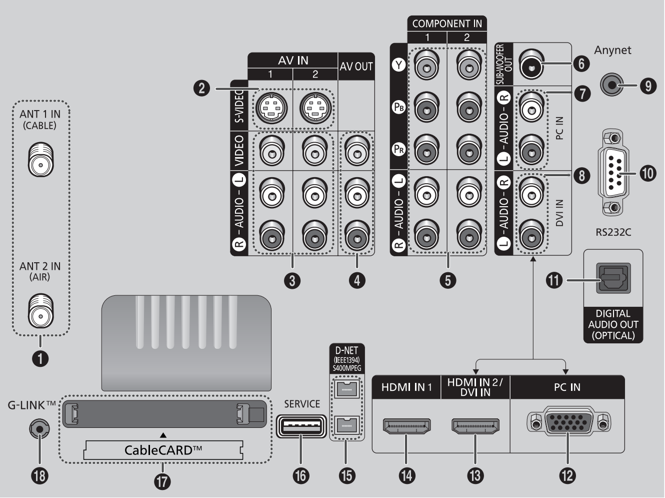
● : Light is On
◑ : Light is Blinking
○ : Light is Off

| TIMER | LAMP | STAND BY/TEMP | Indication |
|---|---|---|---|
| ○ | ○ | ● | Standby state. |
| ○ | ◑ | ○ | The picture will automatically appear in about 15 seconds. |
| ● | ◑ | ○ | Auto Timer ON/OFF has been set and the set will automatically be turned on in about 25 seconds. |
| ◑ | ○ | ◑ | A cooling fan inside the set is not operating normally. |
| ○ | ◑ | ◑ | Lamp cover on the rear of the set is not properly shut. |
| ○ | ○ | ◑ | Check if the ventilation hole on the rear of the set is blocked, because if the inner temperature is too high, the power will shut off. |
| ◑ | ◑ | ◑ | Lamp may be defective. |

- It takes about 30 seconds for the TV to warm up, so normal brightness may not appear immediately.
- The TV has a fan to keep the inside lamp from overheating. You'll occasionally hear it working.

## 11-1-4 Rear Panel Jacks

Use the rear panel jacks to connect components such as a VCR. You can connect different components such as VCRs, Set-Top Box and a DVD player etc., because there are two sets of video input jacks and two sets of component video input jacks on the rear panel of your TV. For more information, see "Connections".



1 ANTENNA terminals
Two independent cables or antennas can be connected to these terminals. Use “ANT 1 IN (CABLE)” and “ANT 2 IN (AIR)” terminals to receive a signal from VHF/UHF antennas or your cable system.

2 S-VIDEO INPUT jacks
Connects an S-Video signal from an S-VHS VCR or DVD player.

3 VIDEO/AUDIO INPUT jacks
Connect video/audio signals from external sources, such as VCR or DVD players.

4 VIDEO/AUDIO OUTPUT jacks
Sends video/audio signals from the TV to an external source, such as a VCR. These jacks are available only in RF, Video and S-Video modes.

5 COMPONENT1, 2 jacks (Y, $P_B$, $P_R$, AUDIO L/R)
Use these jacks to connect the component video/audio signals from a DVD player or a Set-Top Box.

6 SUB-WOOFER OUT jack
Connect to an active SUB-WOOFER.

7 PC AUDIO INPUT jacks
Connect these to the audio output jacks on your PC.

8 HDMI 2/DVI IN (AUDIO L/R)
Connect to the DVI audio output jack of an external device.

9 Anynet
Please refer to the Anynet Owner’s Instruction. This jack is for connecting to other Samsung Anynet-enabled devices.

10 RS232C
Connect to a computer for reading and loading data information.

11 DIGITAL AUDIO OUT (OPTICAL) jack
Connect to a Digital Audio Component.

12 PC VIDEO INPUT jack
Connect these to the video output jack on your PC.

13 HDMI (High Definition Multimedia Interface)/
DVI INPUT jack (HDMI IN 2/DVI IN)
Connect to the HDMI jack of a device with HDMI output.
These inputs can also be used as a DVI connection with separate analog audio inputs. An optional HDMI/DVI cable will be necessary to make this connection. When using the optional HDMI/DVI adapter, the DVI analog audio inputs on your TV allow you to receive left and right audio from your DVI device. (Not compatible with PC)

14 HDMI (High Definition Multimedia Interface)
INPUT jacks (HDMI IN 1)
Connect to the HDMI jack of a device with HDMI output.
(Not compatible with PC)

15 D-Net (IEEE1394) S400 MPEG
Connect to external IEEE1394 digital products such as digital VCRs and camcorders. Two jacks are provided for this purpose, which allow for a high degree of flexibility for connecting your D-Net controlled system.

16 SERVICE
This jack is for software upgrades.

17 CableCARD ™
Insert the CableCARD into the slot.

18 G-LINK™
Connect the IR controller cable to the G-LINK™ terminal on your TV.

## 11-1-5 Remote Control

You can use the remote control up to about 23 feet from the TV. When using the remote control, always point it directly at the TV. You can also use your remote control to operate your VCR, Cable box, DVD player or Samsung Set-Top Box.

1. POWER
   Turns the TV on and off.

2. TV Guide
   Press to display the TV Guide On Screen™ Interactive Program Guide (IPG). (Refer to TV Guide On Screen™ manual.)

3. ANTENNA
   Press to select "AIR" or "CABLE".

4. CHANNEL NUMBER
   Press to directly tune to a particular channel.

5. -
   Press to select additional channels (digital and analog) being broadcast by the same station. For example, to select channel "54-3", press "54", then press "-" and "3".

6. VOL +, VOL -
   Press to increase or decrease the volume.

7. MUTE
   Press to mute the TV sound.

8. Anynet
   Runs the Anynet view functions and sets up Anynet devices.

9. MENU
   Displays the main on-screen menu.

10. CH.LIST
    Displays the channel list.

11. FAV.CH (Favorite Channel)
    Press to switch between your favorite channels.

12. MODE
    Selects a target device to be controlled by the Samsung remote control (i.e., TV, STB, VCR, CABLE, or DVD).

13. PRE-CH
    Tunes to the previous channel.

14. SOURCE
    Press to display all of the available video sources (i.e., TV, Set-Top Box, VCR, DVD, DTV, PC).

15. CH/PAGE ∧ / ∨
    Press to change channels. Moves from one set of screen information to the next in the TV Guide On Screen™.

16. INFO
    Press to display information on the TV screen.

17. EXIT
    Press to exit the menu.

18. ▲, ▼, ◀, ▶, ENTER
    Press to select highlight up, down, left, or right. While using the on-screen menus, press the ENTER to activate (or change) a particular item.

19. D-Net
    Runs the D-Net view function.

20. PIP (Picture In Picture)
    Displays the available channels in sequence. (These buttons change channels in the PIP window only.)
    PIP : When in the TV Guide On Screen, toggles the state between locked and unlocked in the Video Window.

21. STILL
    Press to pause the current screen.

22. P.SIZE
    Press to change the screen size.

23. REC
    Records a program in the TV Guide On Screen™.

24. DNIe (Digital Natural Image engine)
    Activates DNIe Demo mode.

25. SET
    Used during set up of this remote control, so that it will work compatibly with other devices (Set-Top box, VCR, Cable box, DVD, etc.)

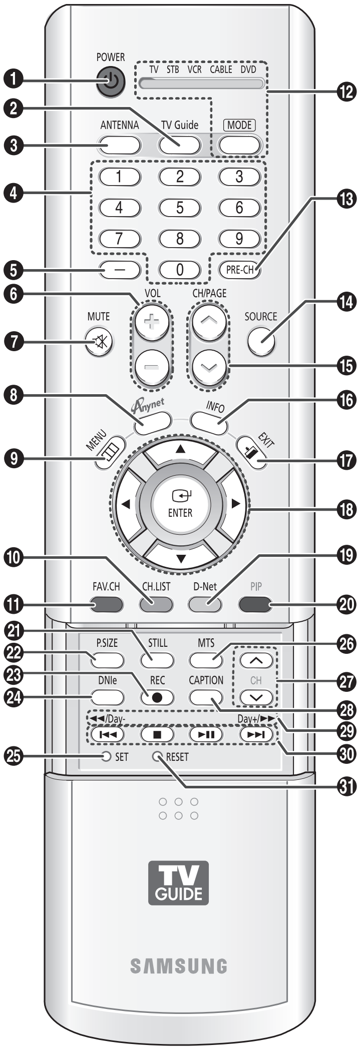
26. MTS (Multichannel Television Stereo)
    Press to choose Stereo, Mono or SAP (Secondary Audio Program).

27. PIP Controls
    **CH** ∧ **/** ∨; Press to displays the available channels in sequence. (These buttons change channels in the PIP window only.)

28. CAPTION
    Controls the caption decoder.

29. ◀◀/Day-, Day+/▶▶
    Moves forward or backwards in 24 hour increments in the Listings Grid in TV Guide On Screen™.

30. VCR/DVD Controls
    Controls VCR or DVD functions: Rewind, Stop, Play/Pause, Fast Forward.



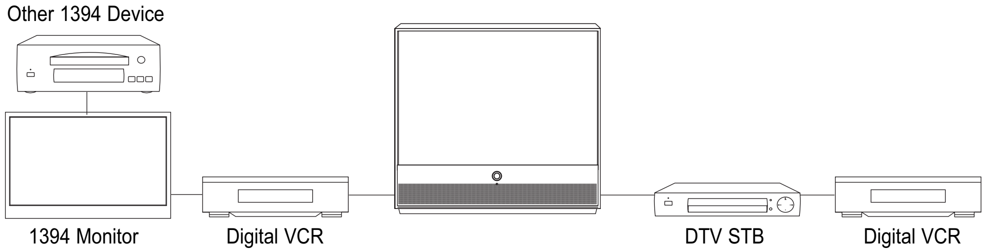
31. RESET
    If your remote control is not functioning properly, take out the batteries and press the reset button for about 2~3 seconds. Re-insert the batteries and try using the remote control again.

## 11-2 New Features

### 11-2-1 D-Net(IEEE1394)

D-Net(IEEE1394) is a cross-platform implementation of the high-speed serial data bus -- defined by the IEEE 1394-1995, IEEE 1394a-2000, and IEEE 1394b standards -- that can move large amounts of data between computers and peripheral devices. It features simplified cabling, hot swapping, and transfer speeds of up to 3.2 gigabits per second (on machines that support 1394b).

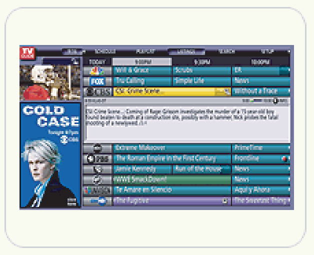
Major manufacturers of multimedia devices have been adopting the D-Net(IEEE1394) technology.
D-Net(IEEE1394) speeds up the movement of multimedia data and large files and enables easy connection of digital consumer products -- including, digital video tapes, digital video disks, set-top boxes.



■ Key Features
- Real Time Audio/Video Transmission(MPEG-2, …)
- High speed Data Transmission
  - • 1394 upto 400Mbps
  - • 1394.b upto 3.2 Gbps
- Hot Plug & Play
- AVC, CMP, EIA775, CEA931, 5C, …
- Variety of Compatible devices :DTV, STB, DVHS, AVHDD, MPEG Camcorder, …
- Copy protection

## 11-2-2 TV Guide On Screen

TV Guide On Screen is an interactive program guide that is built directly into consumer electronics products, including DLP, plasma and LCD televisions, personal video recorders and recordable DVD players.
The guide offers interactive on-screen program listings that enable viewers to quickly and easily navigate, sort, select, and schedule television programming for viewing and recording, all with simple remote control commands.
TV Guide On Screen's patented technology delivers continuously updated program listings to users, regardless of whether they receive their television signal via cable or over-the-air broadcast. TV Guide On Screen works by simply plugging in the television or recording device and activating the guide through an express set-up process.
The guide requires no subscription or special connection and is available at no cost to the consumer.


TV GUIDE
TODAY
9:00PM
9:30PM
10:00PM
Will & Grace
Scrubs
ER
Tru Calling
Simple Life
News
CSI: Crime Scene...
Without a Trace
COLD CASE
Extreme Makeover
PrimeTime
The Roman Empire in the First Century
Frontline
Jamie Kennedy
Run of the House
News
WWE SmackDown!
News
Te Amaré en Silencio
Aquí y Ahora
The Fugitive
The Sweetest Thing

■ Key Features

- Listings Service:
  Displays eight days of viewers' local program listings and descriptions for broadcast and cable;
  Viewers can tune to any program, schedule a program to record, or set a reminder, with the press of a button;
  The Video Window lets viewers monitor the last channel tuned while viewing program listings, or preview channels as they page through listings;
  Color-coded program genres help viewers quickly identify movies, sports, and children's programming.

- Search Feature:
  Viewers can search for programs by categories such as HDTV, movies, sports or children's shows. Within categories, viewers can sort by show type, such as baseball or football.
  Viewers can sort alphabetically, or by a key word such as a show title or a starring actor.

- One-touch Recording:
  To record, viewers simply highlight a program title and then press a button on the remote control. TV Guide On Screen will automatically record the program;
  Programs may be set to record one time or every time they air;
  TV Guide On Screen is a critical component of the recordable devices into which it is built. A week's worth of listings and powerful sorting and recording features make advanced recording simple

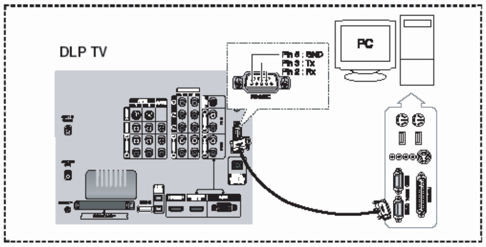
- Reminder Feature:
  Viewers may set reminders to ensure they never miss their favorite shows;
  Reminders can even be set to automatically turn on the TV when a show begins.

## 11-2-3 CableCARD

A small PCMCIA device, not working by itself, designed to run specialized tasks in association with a DCR TV, such as a conditional access sub system or to provide resources required by an application but not provided directly by the host.

## 11-2-4 RS-232C

### Connect the DLP DTU using the serial port.



Do not disconnect or connect the RS-232C cable while the Computer or the DLP TV is operating. It may cause serious damage to the Computer or the DLP TV.

If the PC is not properly configured, the RS-232C connection may not work properly. For further details, refer to the Computer's product documentation.

### Serial Port Settings (Select Standard RS232)

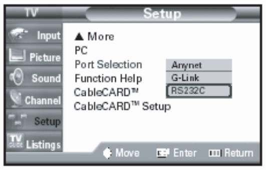
| | |
|---|---|
| **Specification** | RS-232C |
| **Bit Rate** | 19200 bps |
| **Data Bits** | 8 bits |
| **Parity** | None |
| **Stop Bits** | 1 bit |
| **Flow Control** | None |

### DLP DTU Menu Configuration

Since Anynet, G-Link and RS232C share a serial port, you have to select RS232C from the menu for the following communication.

**Menu Setting Procedures**

Select **Setup** → **Port Selection** → **RS232C**



### Serial Communication Protocol

#### Command Packet Structure [7bytes]

| | | | | | | |
|---|---|---|---|---|---|---|
| 0x08 | 0x22 | Cmd1 | Cmd2 | Cmd3 | Value | CS |

- A command packet consists of 7 bytes in total.
- The two bytes 0x08 and 0x22 signify that the packet is for serial communication.
- The following 4 bytes represent a pre-defined command that can be defined by the user.
- The last byte is the checksum which checks the validity of the current packet.

**Header [2 Byte]:** Pre-defined values fixed to 0x08 and 0x22.
**Cmd1 [1 Byte]:** The first value of the code defined in the command list (Hexadecimal)
**Cmd2 [1 Byte]:** The second value of the code defined in the command list (Hexadecimal)
**Cmd3 [1 Byte]:** The third value of the code defined in the command list (Hexadecimal)
**Value [1 Byte]:** Input parameter for the command (Default: 0) (Hexadecimal)
**CS [1 Byte]:** Checksum (the 2's complement of the sum of all the values except for the CS value.)

#### Response Packet Structure [3 Bytes]

- Success

| | | |
|---|---|---|
| 0x03 | 0x0C | 0xF1 |

- Fail

| | | |
|---|---|---|
| 0x03 | 0x0C | 0xFF |

When the received packet from an external device has a valid value, a Success packet is sent. Otherwise, a Fail packet is sent.

**A Fail packet is sent if:**

- The received packet length is not equal to 7 bytes.
- The 2 byte packet header value is not equal to 0x08, 0x22.
- The check sum is incorrect.

**Failure detection by an external device**

An external device classifies the packet as Fail if it does not receive a Success packet within 100ms.

### Communication Sequence

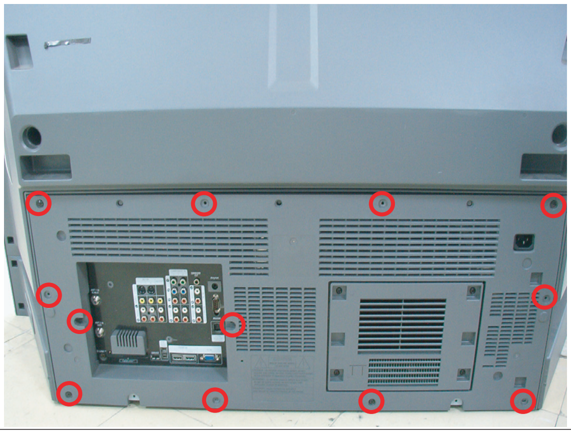
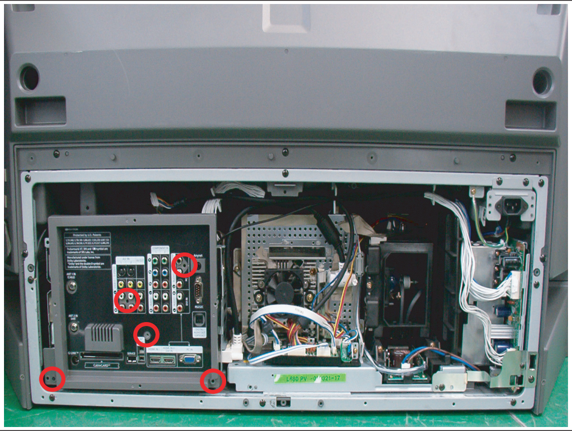
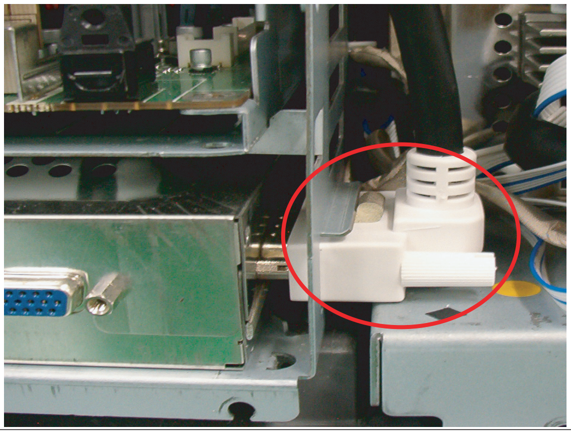
- PC
  Creates a command packet and sends it through RS232C.
- DLP DTV
  Receives a packet and parses the packet.
  Determines whether it is a success or fail, and transmits the Ack packet to the PC.
  Controls the DLP DTV with the parsed command.
- PC
  Waits for the Ack packet.
  Prepares the next command, if a Success packet arrives immediately.

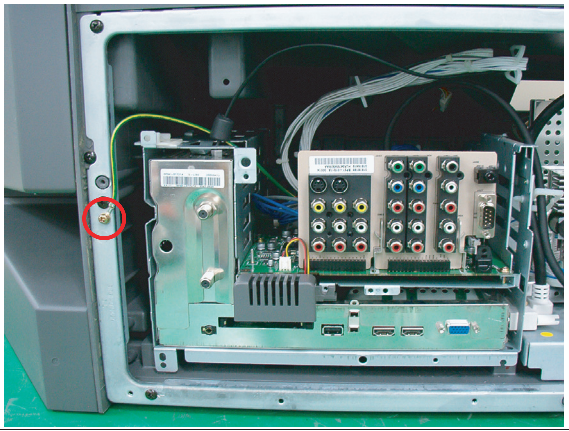
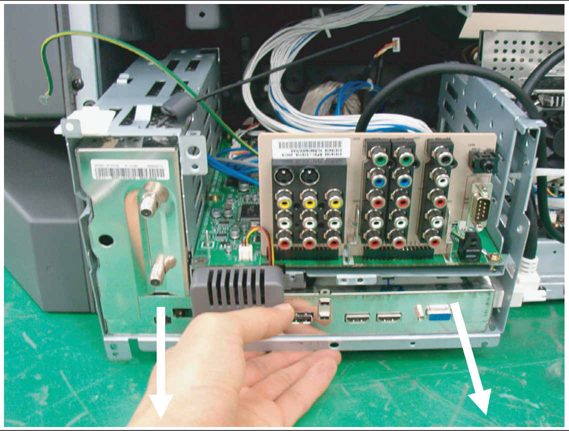
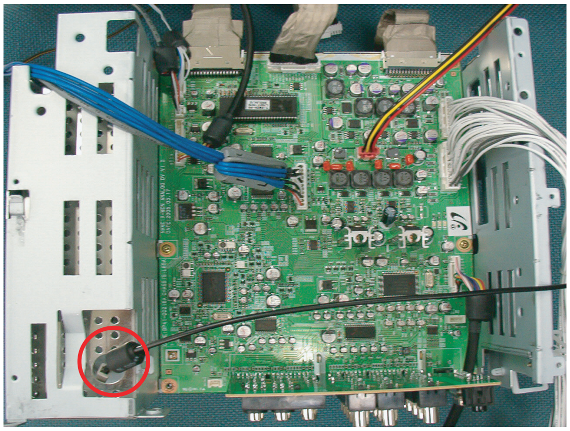
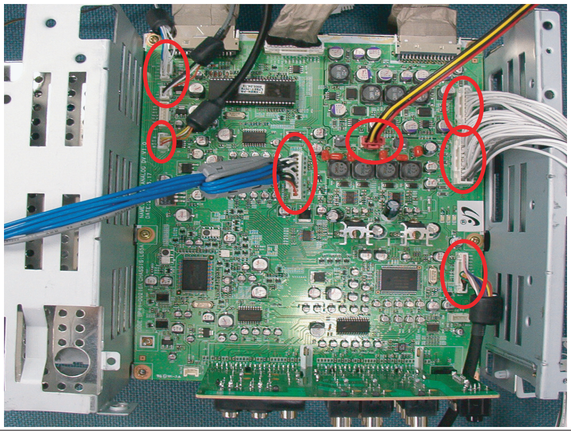
# MEMO

# 12. Disassembly & Reassembly

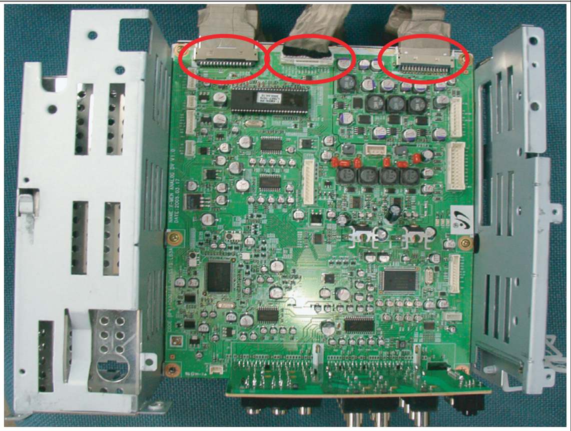
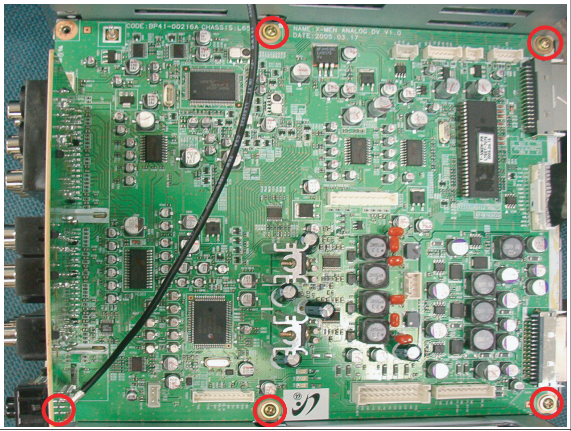
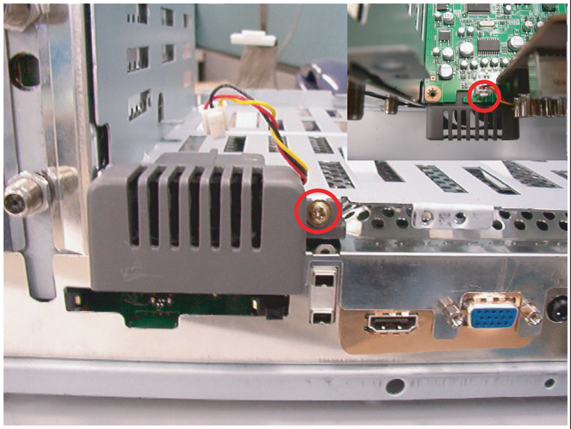
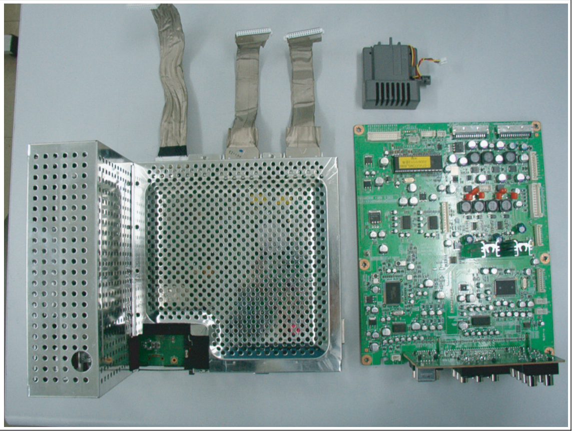
## 12-1 Overall Disassembly & Reassembly

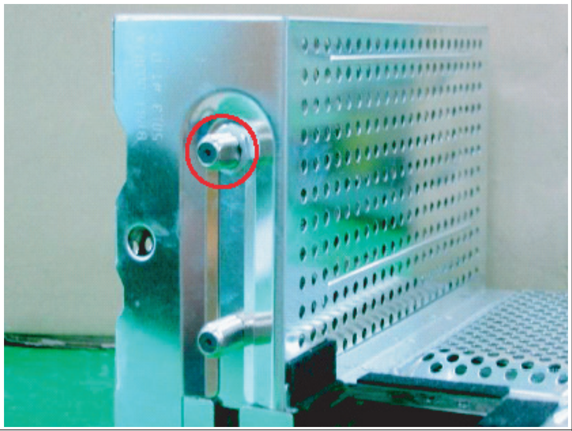
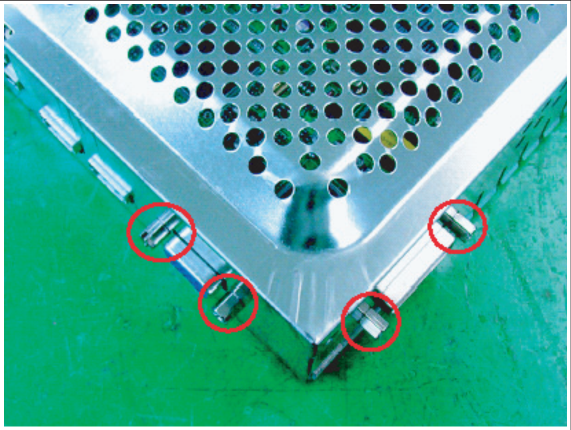
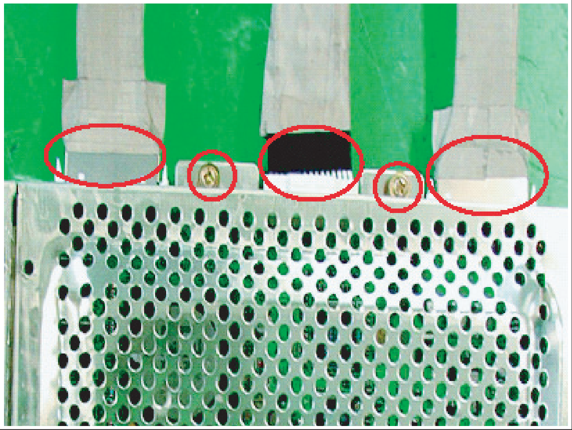
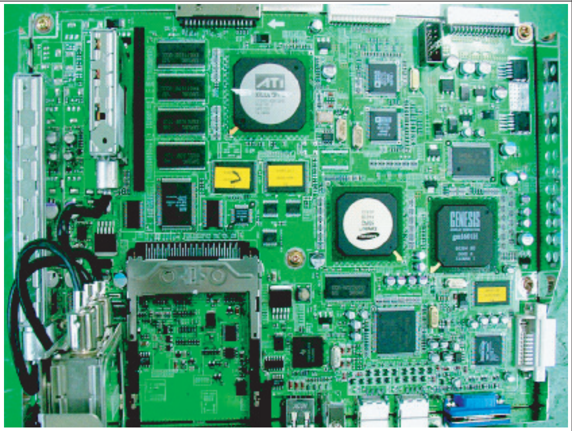
### 12-1-1 Separation of the back cover and the chassis

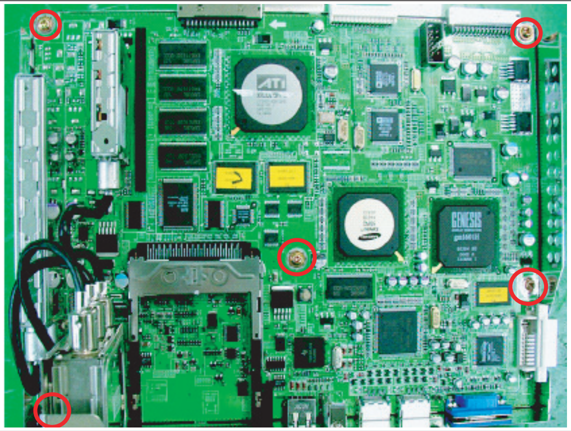
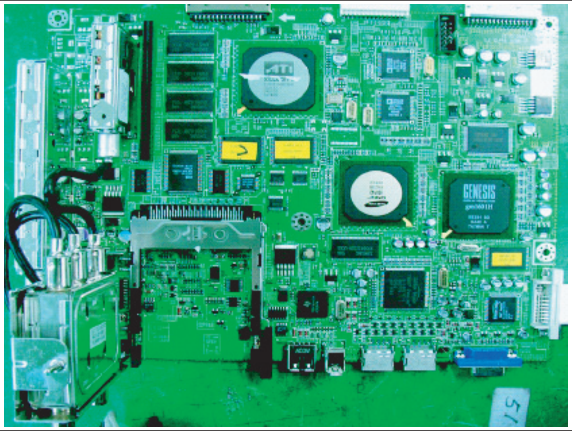
| Part Name | Description | Description Photo |
|---|---|---|
| Back Cover | ① Remove 12 screws to remove the back bottom cover.<br>: TH,B,M4.L15,BLK,SWRCH18A |  |
| Terminal Board | ① Remove 5 screws to remove the Terminal Board.<br>* The 3 Terminal Board Screws<br>: TH,B,M4.L15,BLK,SWRCH18A<br>* The 3 Jack Screws<br>: RH,B,M4,L15,ZPC(BLK),SWRCH18 |  |
| DVI cable | ① Separate the DVI cable.<br>⚠: The DVI screw is made of soft plastic and may easily break when applying excessive force through a screw driver. Ensure that extreme caution is taken when loosening the screw. |  |

| Part Name | Description | Description Photo |
|---|---|---|
| Terminal Board | ① Remove the screw.<br>: WSP,PH,+,M4,L12,ZPC(YEL),SM10C |  |
| Holder Chassis | ① Pull out the holder Chassis. |  |
| Analog Board | ① Seperate the Gt-wires.<br>② Seperate the cables. | <br> |

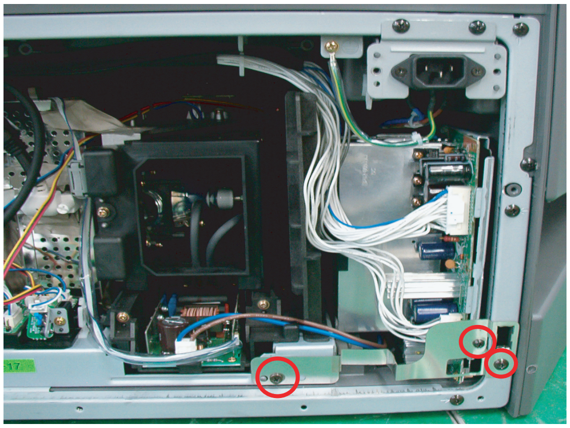
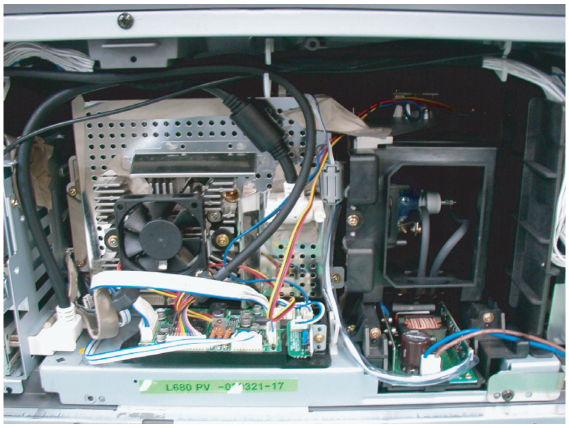
## 12-1-2 Separation of the Analog and Digital Board

| Part Name | Description | Description Photo |
|---|---|---|
| Analog Board | ① Seperate the cables.<br>⚠: The 30 pin shield cable should be removed by holding the two lock ends of the cable, as failing to do so, could damage the connector. |  |
| | ① Remove the 5 screws and separate Fan cable(CN275). Detach Analog board from Assy.<br>: PWH,B,M3,L10,ZPC(YEL),SWRCH18A |  |
| Fan | ① Remove both the connector and the screws before removing the fan. Then remove the fan from the holder chassis.<br>: PWH,B,M3,L10,ZPC(YEL),SWRCH18A |  |
| Analog Board/ Digital Board/ Fan | ① Analog, Digital Board and Fan. |  |

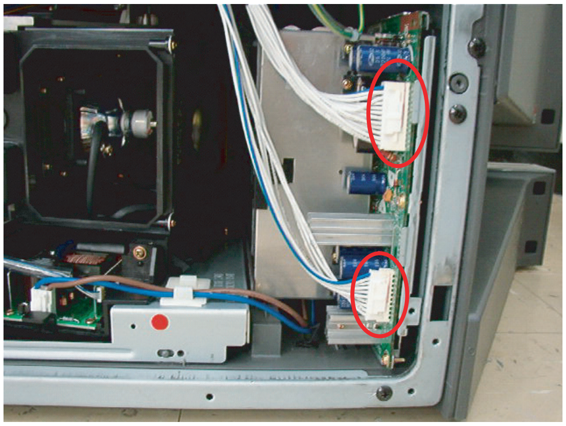
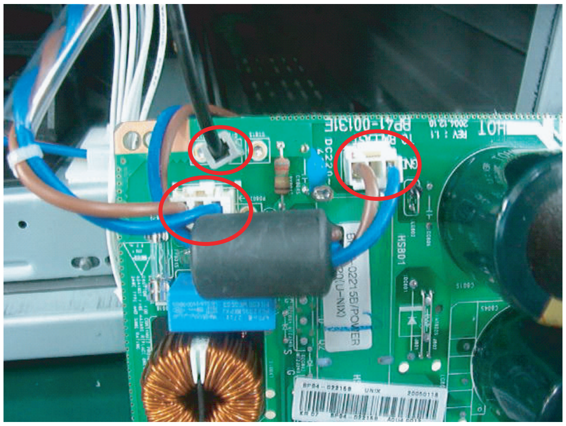
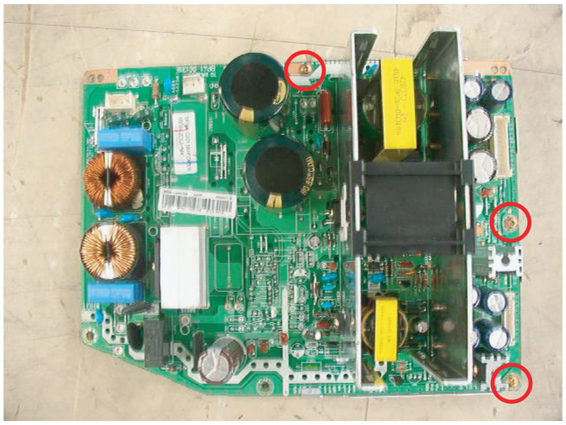
| Part Name | Description | Description Photo |
|---|---|---|
| Digital Board | ① Use the long-nosed pliers to remove the hex nut.<br>Nut-Hexagon : -,M3/8X32,ZPC(WHT),MBSBD<br>⚠: The standoffs can easily break if excessive force is applied. Use extreme caution when removing and replacing. |  |
| | ① Remove 2 standoffs from the DVI connector.<br>StandOff : M3,L5,Ni PLT,SUM24L,#4-40<br>② Remove 2 standoffs from the PC connector. |  |
| | ① Remove the screws and cables.<br>: PWH,B,M3,L10,ZPC(YEL),SWRCH18A<br>⚠: The 30 pin shield cable should be removed by holding the two lock ends of the cable, as failing to do so, could damage the connector. |  |
| | ① After Removing the Top Shield Case.<br>⚠: Use the two lock holes on either side of the shield case when removing it. |  |

| Part Name | Description | Description Photo |
|---|---|---|
| Digital Board | ① Remove the screws before removing the shield case at the bottom.<br>: PWH,B,M3,L10,ZPC(YEL),SWRCH18A |  |
| | ① Digital Board. |  |

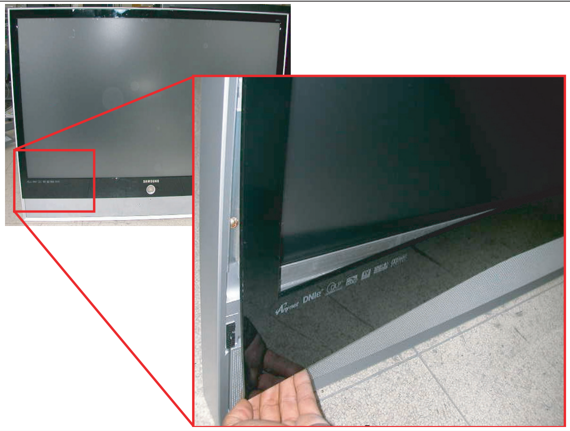
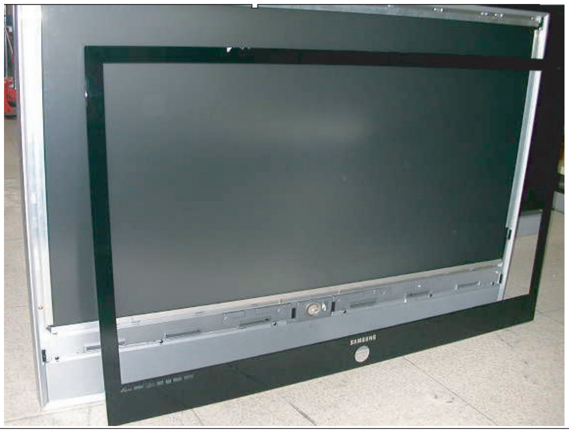
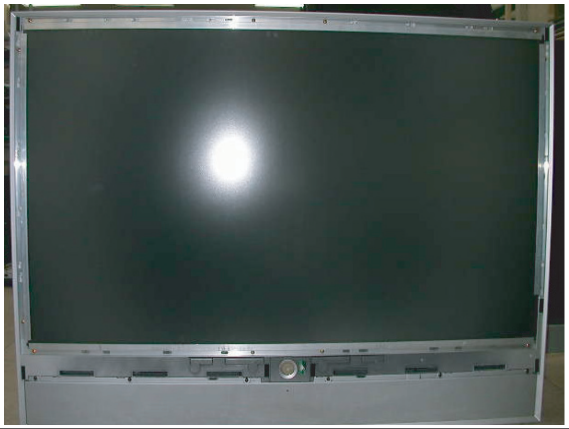
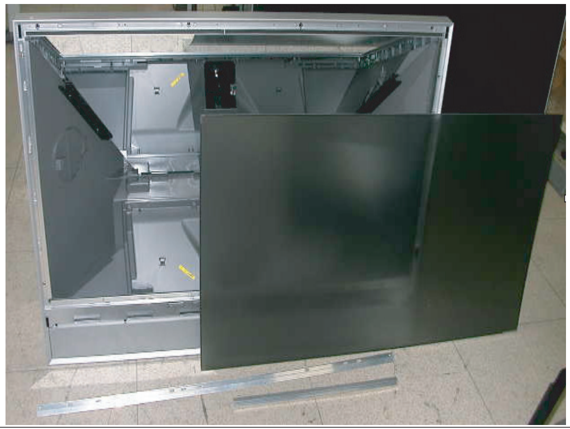
## 12-1-3 Separation of the optical engine

| Part Name | Description | Description Photo |
|---|---|---|
| Optical Engine | ① Remove the three screws to remove the bracket.<br>: TH,B,M4.L15,BLK,SWRCH18A<br>② The connector from the Power Supply to the Ballast has to be removed before the Light Engine can be taken out of the unit. |  |
|  | ① Remove the engine by pulling it out of the cabinet.<br>⚠: Be careful when removing the Light Engine as it may get caught up by the upper cable of the case. | <br> |

### 12-1-4 Separation of the Power Board

| Part Name | Description | Description Photo |
|---|---|---|
| Power Board | ① Separate the cables. |  |
| | ① Remove the power board carefully before disconnecting the cables.<br>⚠ Notice: Wear gloves when handling the power board as there may be some remaining electrical charge in the capacitors. Specifically, avoid touching any part of the capacitors. |  |
| | ① After removing the screws, separate the bottom power braket.<br>: PWH,B,M3,L10,ZPC(YEL),SWRCH18A |  |

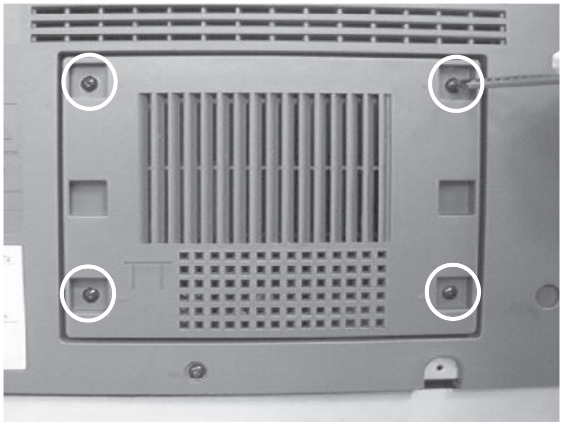
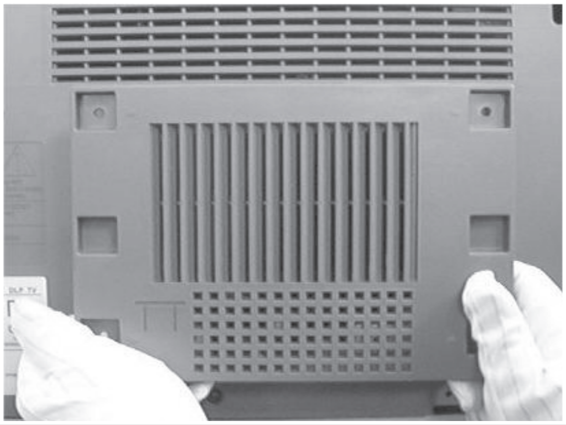
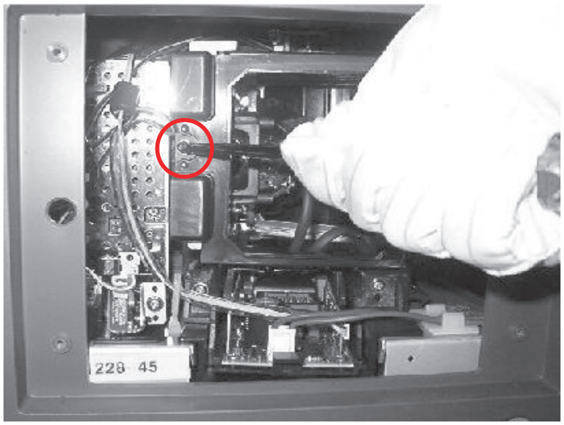
## 12-1-5 Screen Remove

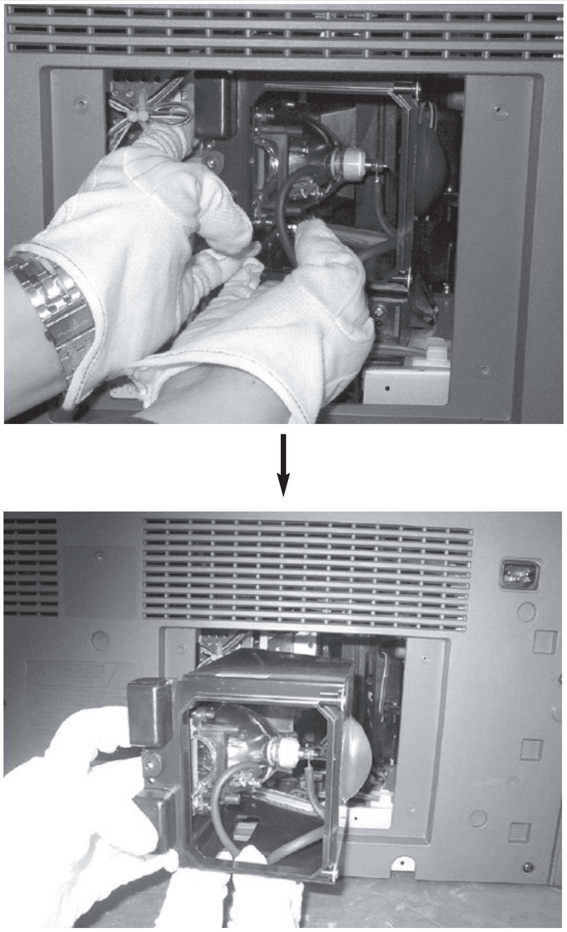
| Part Name | Description | Description Photo |
|---|---|---|
| Cover-Front | ① Cover-Front's lower department pull to fore-end and remove.<br>⚠: There is no Screw conclusion place. |  |
|  | ① State that Cover-Front is detached. |  |
| Brkt-Screen,Top / Brkt-Screen, Right | ① Separate Brkt-Screen,Top and Right after remove 6 screws indicating in picture.<br>: TH M4,L12,YELLOW. |  |
| Screen | ① Separate Screen. |  |

## 12-1-6 Lamp Replacement

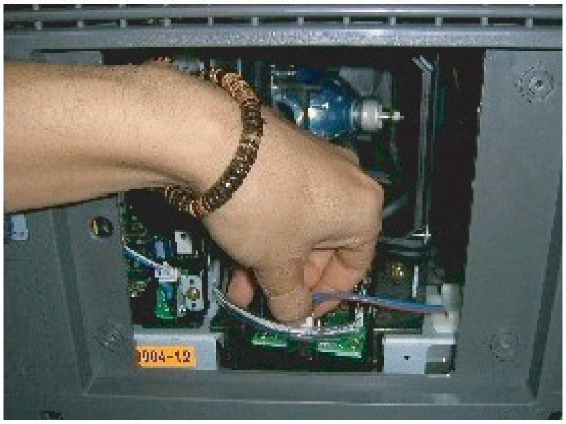
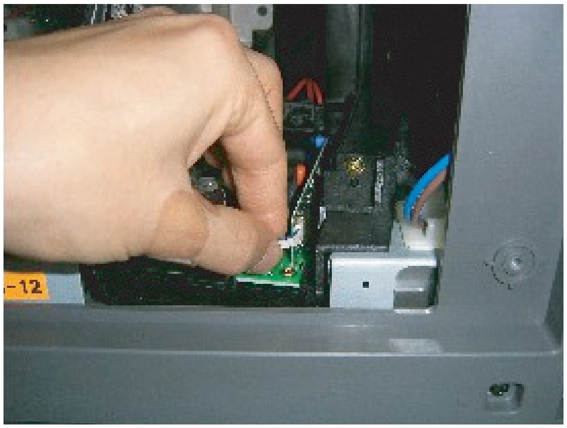
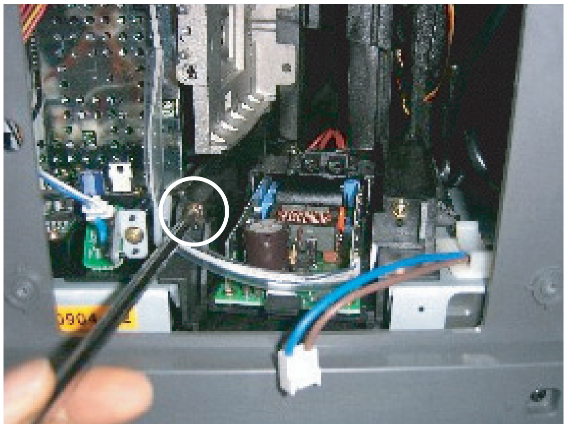
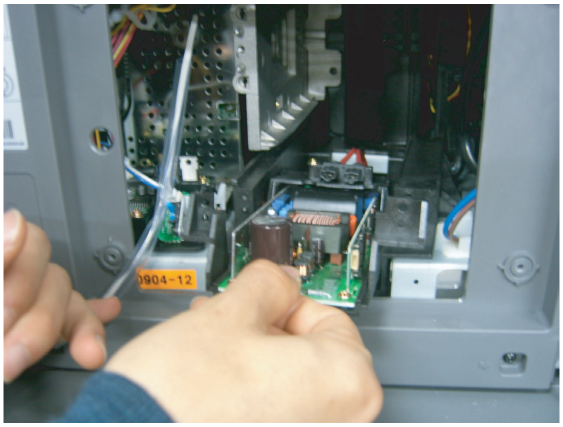
⚠ Notice

1. Replace with the correct code numbered lamp to avoid damage to the TV.
2. Turn the power off and wait for 30 minutes before replacing the lamp as it will be hot.
3. Do not touch the glass part of the lamp with your bare hands nor insert any foreign object inside the cover as it may cause poor screen quality, electric shock or fire.
4. Do not place the old lamp near flammable objects or within the reach of children.
5. Be sure to connect this TV directly to an AC wall outlet. If the TV's AC plug is connected to a cable box or other source, it will not allow for proper cool down time.

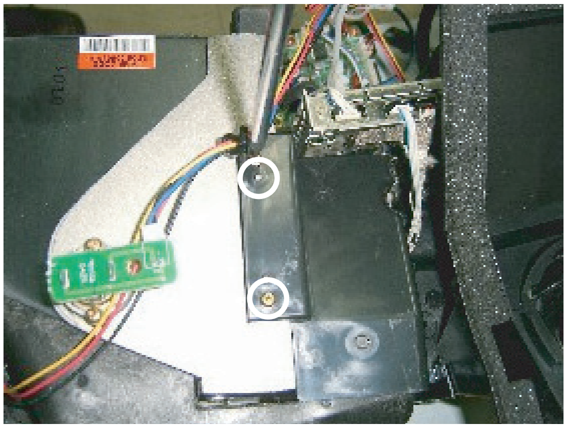
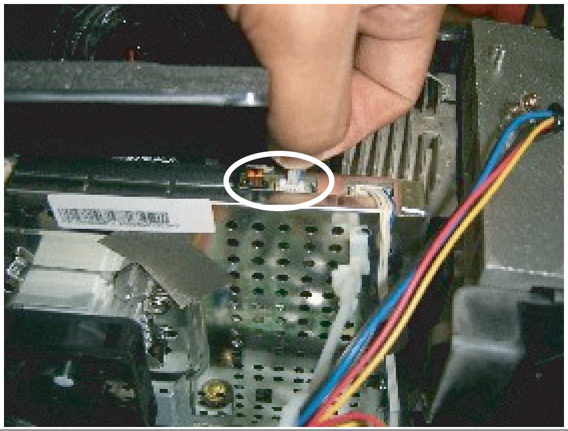
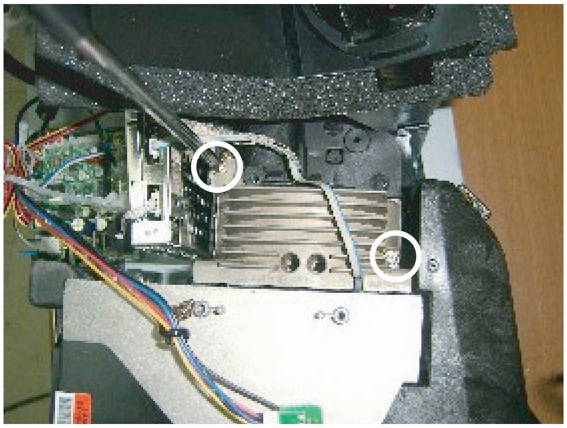
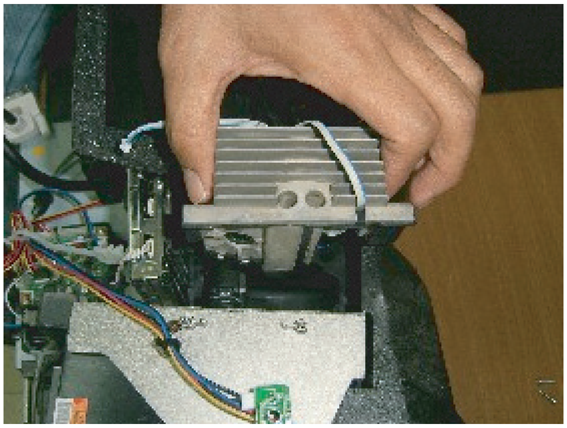
| Part Name | Description | Description Photo |
|---|---|---|
| Lamp | ① Unplug the TV, then use a screwdriver to remove the 4 screws.<br>: WSP,PH,+,M4,L12,ZPC(YEL),SM10C |  |
| | ① Remove the Lamp cover. |  |
| | ① Loosen the screw securing the Lamp by using a screwdriver.<br>: WSP,PH,+,M4,L12,ZPC(YEL),SM10C |  |

| Part Name | Description | Description Photo |
|---|---|---|
| Lamp | ① Separate the Lamp from the engine by holding the handle and pulling it out.<br>② To reinstall the Lamp, follow these steps in reverse order. |  |

## 12-1-7 Ballast Replacement

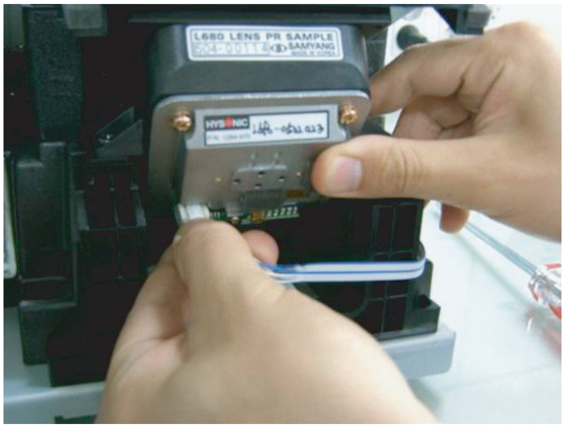
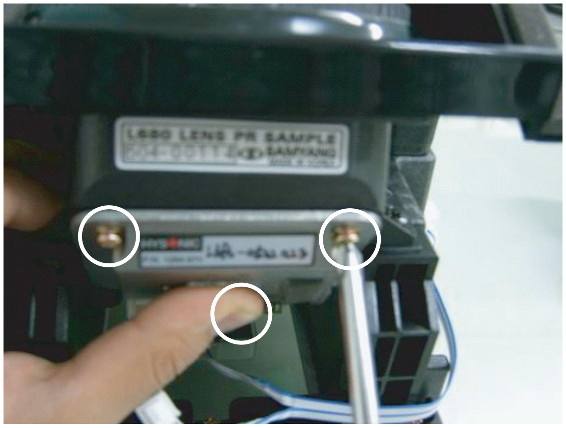
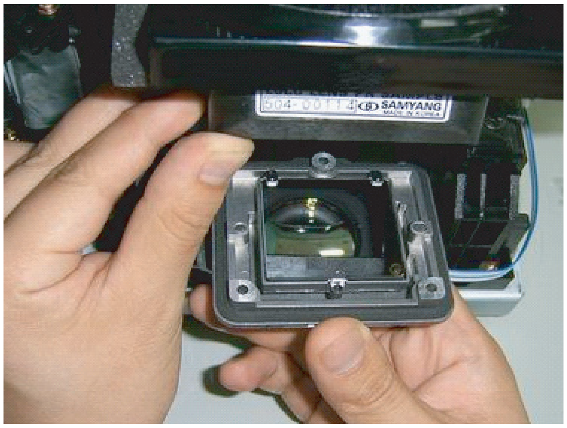
| Part Name | Description | Description Photo |
|---|---|---|
| Ballast Board | ① Remove the lamp, refering to lamp replacement.(12-8page)<br>Remove the ballast power cable. |  |
| | ① Remove the Ballast SCI cable. |  |
| | ① Remove the two screws at the Holder Ballast.<br>: PWH,+,B,M3,L10,ZPC(YEL),SWRCH18A,- |  |
| | ① Pull out the Ballast assembly.<br>② Replace it with a new one and re-assemble it in the reverse order. |  |

## 12-1-8 Color Wheel Ass'y Replacement

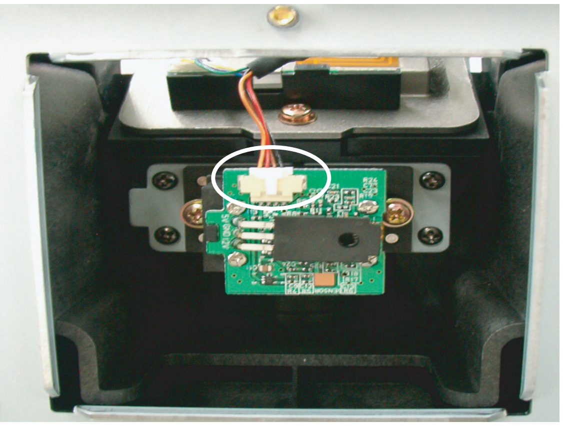
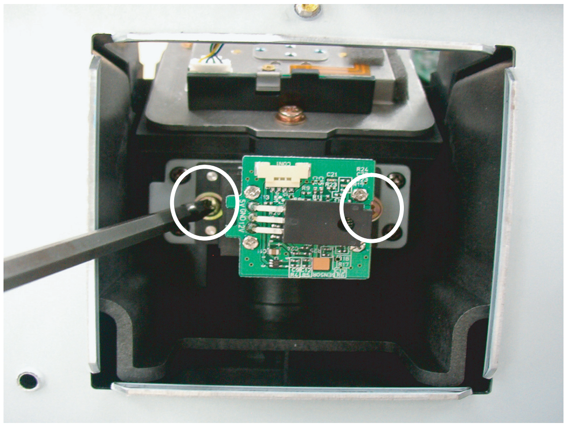
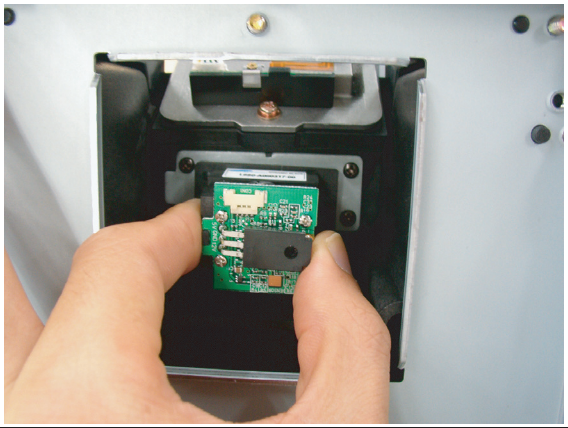
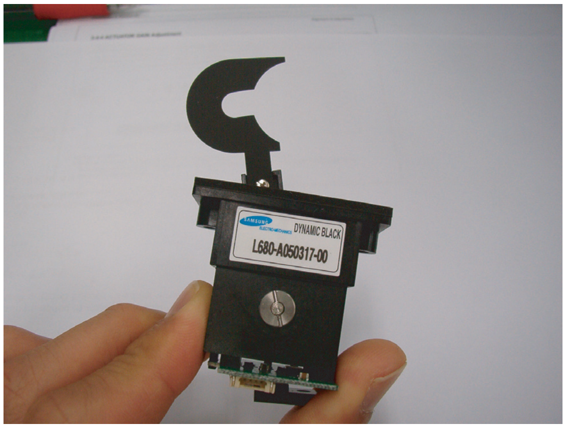
| Part Name | Description | Description Photo |
|---|---|---|
| Color Wheel | ① Remove 2 screws to remove the color wheel cover.<br>: WSP,PH,+,M3,L8,ZPC(YEL),SW |  |
| | ① Remove two cables at the DMD Board. |  |
| | ① Remove 2 screws.<br>: PWH,+,B,M3,L10,ZPC(YEL),SWRCH18A,- |  |
| | ① Disassemble the color wheel assembly. |  |

| Part Name | Description | Description Photo |
|---|---|---|
| Color Wheel | ① Replace it with a new color wheel and rubber assembly.<br>⚠ Notice : Never touch the color wheel. Touch only the cover assembly. | |

## 12-1-9 Actuator(Smooth Picture) Replacement

| Part Name | Description | Description Photo |
|---|---|---|
| Actuator | ① Remove the cable at the Actuator. |  |
| | ① Remove screws(3ea) at the Actuator cover.<br>: BH,+,M3,L16,ZPC(YEL),SWRCH |  |
| | ① Replace it with a new actuator. |  |

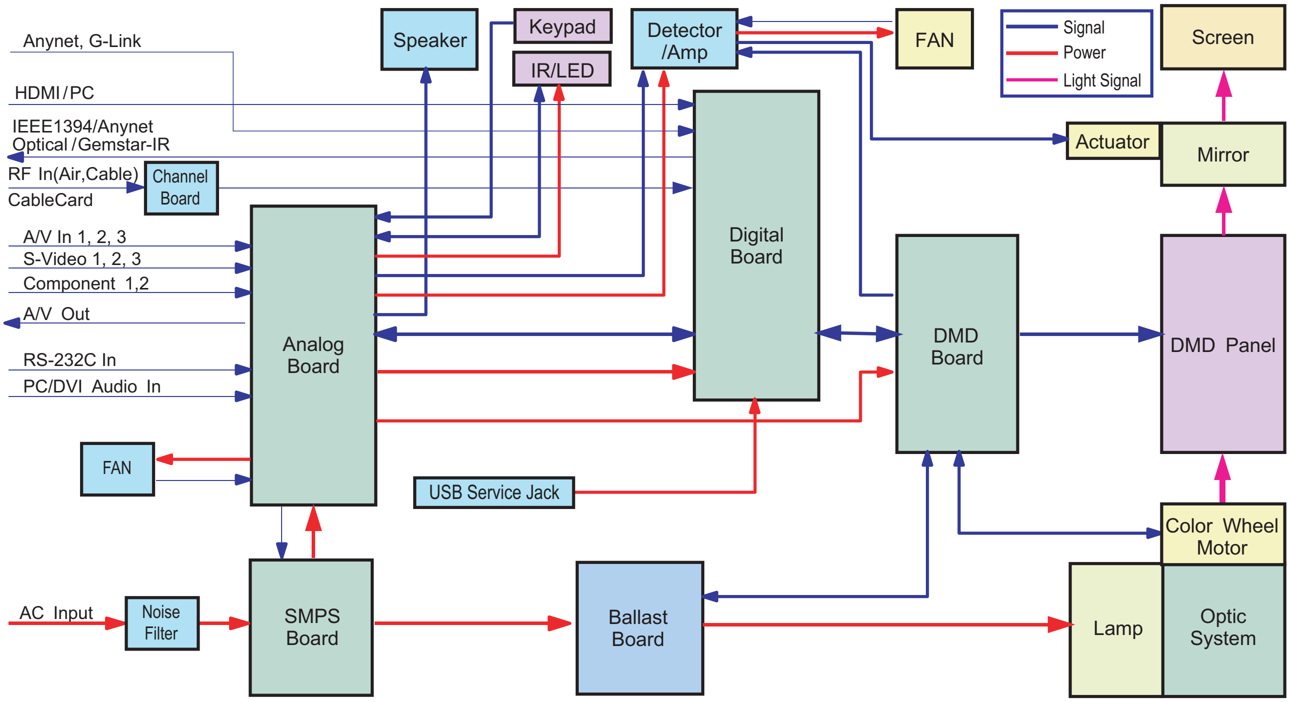
## 12-1-10 Dynamic Black Replacement

| Part Name | Description | Description Photo |
|---|---|---|
| Dynamic Black | ① Remove the at the cable. |  |
| | ① Remove screw(2ea).<br>: WSP,BH,+,M3,L16,ZPC(YEL),SWRCH |  |
| | ① Disassembly Dynamic Black assembly. |  |
| | ① Replace it with new Dynamic Black assembly. |  |

# MEMO

# 13. Circuit Description

## 13-1 Overall Block Description


Anynet, G-Link
HDMI/PC
IEEE1394/Anynet
Optical/Gemstar-IR
RF In(Air,Cable)
CableCard
Channel Board
A/V In 1, 2, 3
S-Video 1, 2, 3
Component 1,2
A/V Out
RS-232C In
PC/DVI Audio In
FAN
Speaker
Keypad
IR/LED
Detector /Amp
FAN
Signal
Power
Light Signal
Screen
Actuator
Mirror
Analog Board
Digital Board
DMD Board
DMD Panel
USB Service Jack
Color Wheel Motor
AC Input
Noise Filter
SMPS Board
Ballast Board
Lamp
Optic System

The DLP TV is largely divided into: Power part, Engine part and Analog + Digital parts.
The ass'y that consists of the DMD board, Detect (Actuator) board, lamp, ballast and optical devices is called the Engine.
The analog + digital board parts receive the AV signals to output voice signals and process the remote control signals.
The engine part displays the video data on the screen, which is generated in the analog + digital boards.

The AV signals are input through the analog and digital boards. ADV7400 processes the MUX and decoding while X226 B processes the CPU functions, MPEG and I2S.
Finally, the improved DNIe image is sent to the DMD engine board.

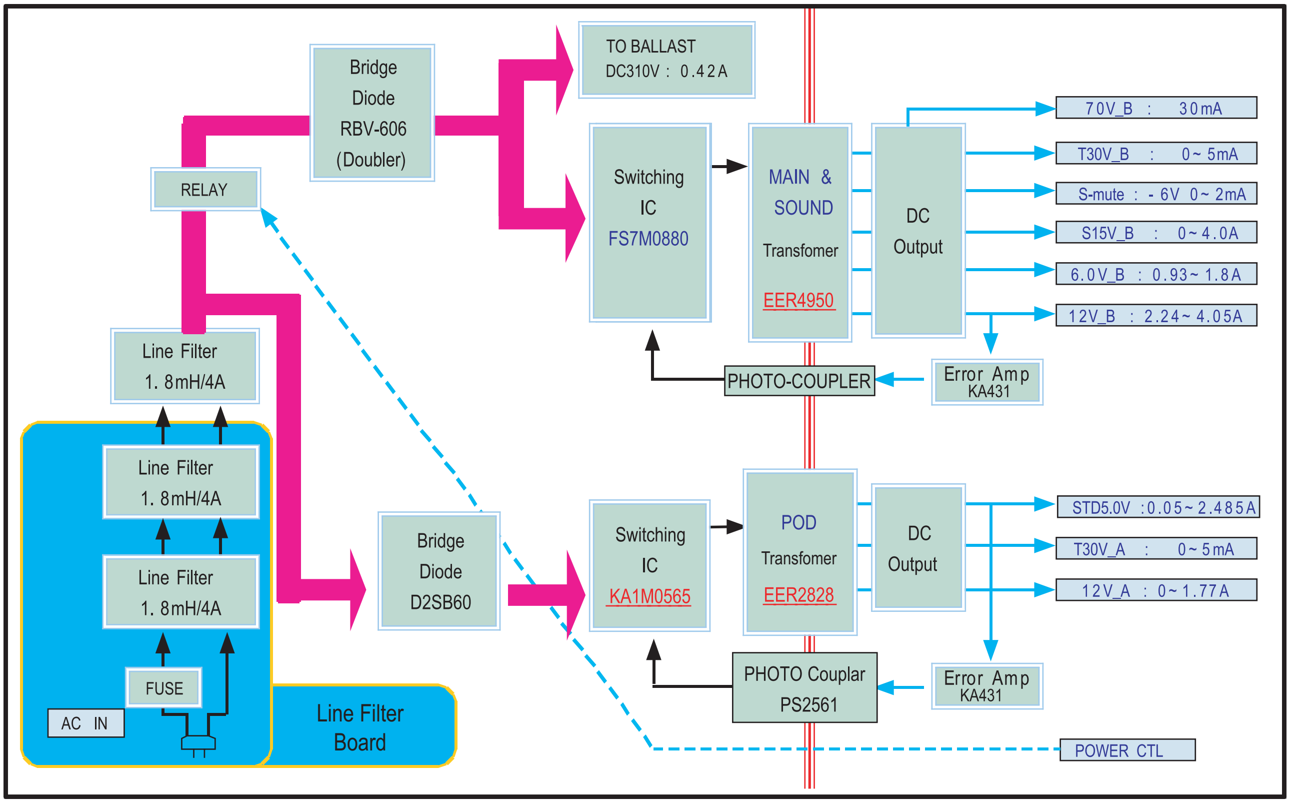
The final data by DNIe is processed in DDP1011 of the DMD board to display the image on the DMD panel. This image is created by the light of the lamp through the color wheel which is enlarged and projected onto the screen.
This is the DLP of the L7 or L8 type that the actuator operates additionally during this process.

The power terminal generates the DC power needed for the product and sends it to the analog board. The analog board supplies the power to the digital and DMD boards.
In the meantime, the power source board supplies DC220V - 400V directly to the ballast in order to light the lamp.
The ballast is like a stabilizer for lighting the lamp.

The ultimate purpose of the TV set is to project an image onto the screen and output the voice signals synchronized with the image. And based on the DMD panel used, a 1-panel TV requires a color wheel while a 3-panel TV does not. The HD3 panel needs an actuator while the HD2 does not. However, the drive mechanism and the overall block structure of the two panels are the same.

# 13-2 Partial Block Description

## 13-2-1 Power Board Block Description


TO BALLAST
DC310V : 0.42A
Bridge
Diode
RBV-606
(Doubler)
RELAY
Switching
IC
FS7M0880
MAIN &
SOUND
Transfomer
EER4950
DC
Output
70V_B : 30mA
T30V_B : 0~5mA
S-mute : - 6V 0~2mA
S15V_B : 0~4.0A
6.0V_B : 0.93~1.8A
12V_B : 2.24~4.05A
PHOTO-COUPLER
Error Amp
KA431
Line Filter
1. 8mH/4A
Line Filter
1. 8mH/4A
Line Filter
1. 8mH/4A
FUSE
AC IN
Line Filter
Board
Bridge
Diode
D2SB60
Switching
IC
KA1M0565
POD
Transfomer
EER2828
DC
Output
STD5.0V :0.05~2.485A
T30V_A : 0~5mA
12V_A : 0~1.77A
PHOTO Couplar
PS2561
Error Amp
KA431
POWER CTL

1. What is SMPS?
   This is an acronym for Switching Mode Power Supply and this is responsible for receiving AC input voltage (Line frequency: 50HZ~60HZ) and supplying insulated DC output.

2. SMPS Components
   1) Standby Power: A combination of ICS801 (SWITCHING IC) and TS801S (TRANS) that supplies STAND-BY 5V for operating the Micom.
   2) Multi Power: The voltage supplied when the power is turned on.
      It is a combination of IC801S and T801S that supplies various voltages including D12V, A6.5V, S14.5V, T30V and A65V.

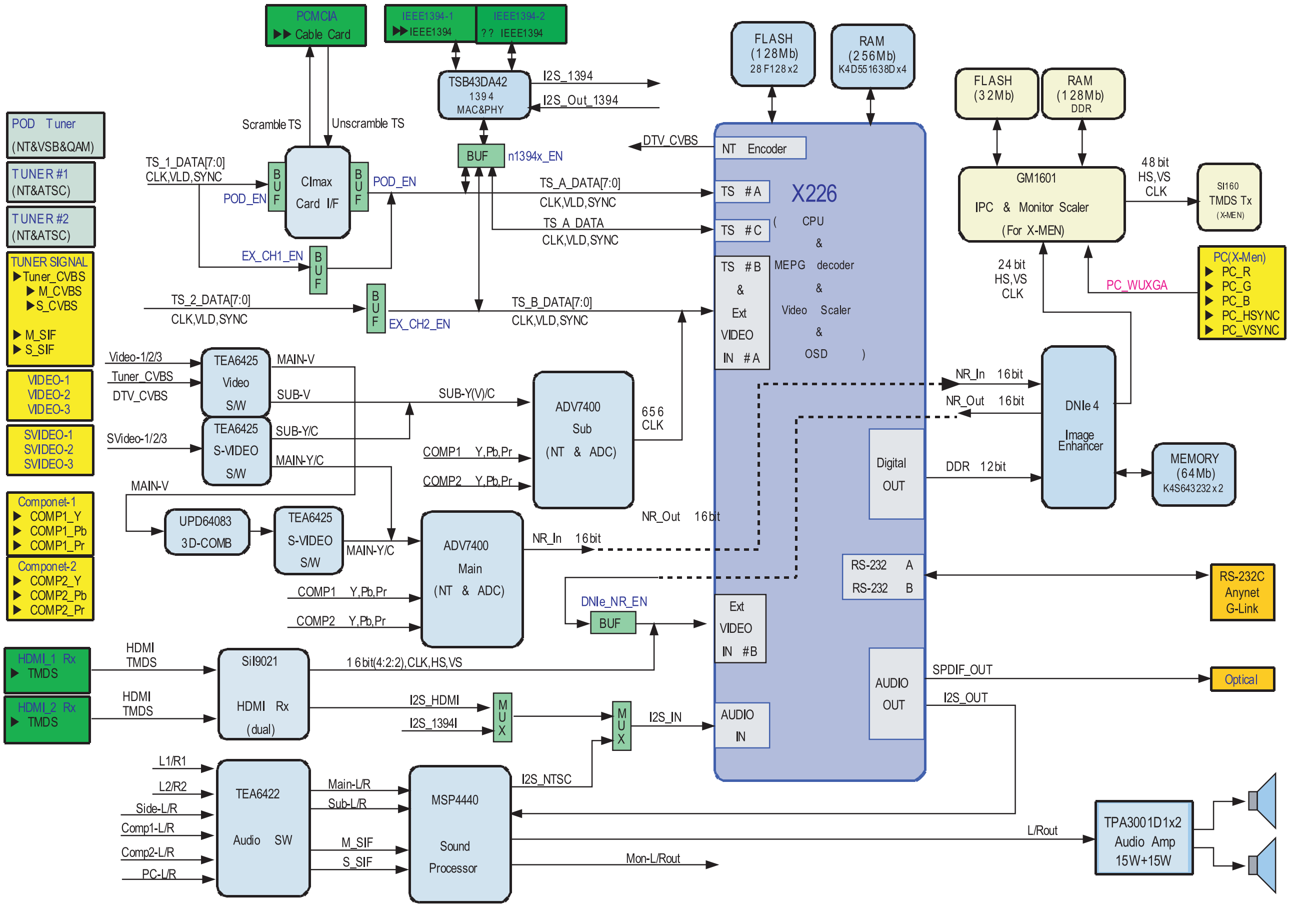
3. SMPS Operation
   1) SMPS System: Uses Fly-Back technology for both standby and multi power.
   2) Operation: Fly-Back is one of the most popular power-supply systems and uses less power than 200W as well as being the cheapest of all multi output SMPS systems.
      Let's have a look at how it operates···
      a. Converts AC input into DC (HOT) (rectifies to DS801 before smoothing to CS801)
      b. The converted DC voltage is high, especially compared to ground, so touching it will cause electric shock. Use T801S (Trans) to insulate the secondary voltage and take advantage of the PWM operations of T801S and IC801S to induce it.
      c. The secondary induced voltage is a dozen-KHZ square wave power, which goes through the smoothing cap (CS822) to be generated in the standby 5V.
      d. Multi power also operates the same way.

4. Input&Output voltage

1) Input voltage * Aemrica(AC120V) - OPTION
* Korea(AC220V) - OPTION
* The others(AC100V~AC240V) - OPTION

2) Output voltage * D12V / 2.5A - 12V , 3.3V , 1.8V : For signal processing
* A6.5V / 1A - For driving the tuner
* S14.5V / 4A -For driving sound processor
* T30V / 5mA - For driving the tuner
* A65V / 30mA - For driving the actuator

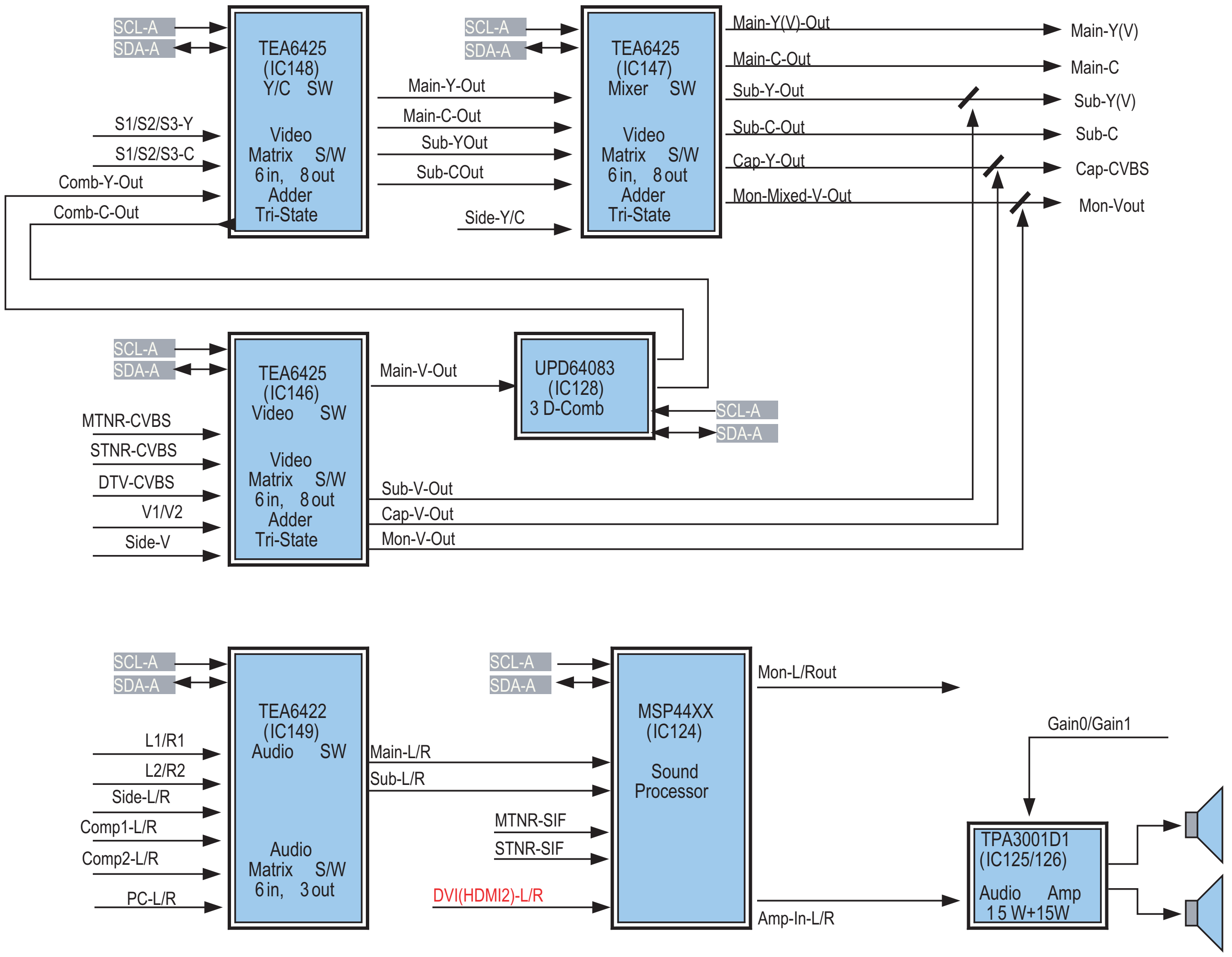
## 13-2-2 Digital Board Block Description


PCMCIA
▶▶ Cable Card
IEEE1394-1
▶▶IEEE1394
IEEE1394-2
?? IEEE1394
TSB43DA42
1394
MAC&PHY
I2S_1394
I2S_Out_1394
FLASH
(128Mb)
28F128x2
RAM
(256Mb)
K4D551638Dx4
FLASH
(32Mb)
RAM
(128Mb)
DDR
POD Tuner
(NT&VSB&QAM)
TUNER #1
(NT&ATSC)
TUNER #2
(NT&ATSC)
Scramble TS
Unscramble TS
TS_1_DATA[7:0]
CLK,VLD,SYNC
BUF
CImax
Card I/F
POD_EN
BUF
n1394x_EN
DTV_CVBS
NT Encoder
TS_A_DATA[7:0]
CLK,VLD,SYNC
TS #A
X226
TS_A_DATA
CLK,VLD,SYNC
TS #C
( CPU
&
MEPG decoder
&
Video Scaler
&
OSD )
TS #B
&
Ext
VIDEO
IN #A
GM1601
IPC & Monitor Scaler
(For X-MEN)
48 bit
HS,VS
CLK
SI160
TMDS Tx
(X-MEN)
24 bit
HS,VS
CLK
PC_WUXGA
PC(X-Men)
▶ PC_R
▶ PC_G
▶ PC_B
▶ PC_HSYNC
▶ PC_VSYNC
TUNER SIGNAL
▶Tuner_CVBS
▶ M_CVBS
▶ S_CVBS
▶ M_SIF
▶ S_SIF
EX_CH1_EN
TS_2_DATA[7:0]
CLK,VLD,SYNC
EX_CH2_EN
TS_B_DATA[7:0]
CLK,VLD,SYNC
VIDEO-1
VIDEO-2
VIDEO-3
Video-1/2/3
Tuner_CVBS
DTV_CVBS
TEA6425
Video
S/W
MAIN-V
SUB-V
SUB-Y(V)/C
ADV7400
Sub
(NT & ADC)
656
CLK
NR_In 16bit
NR_Out 16bit
DNIe 4
Image
Enhancer
SVIDEO-1
SVIDEO-2
SVIDEO-3
SVideo-1/2/3
TEA6425
S-VIDEO
S/W
SUB-Y/C
MAIN-Y/C
COMP1 Y,Pb,Pr
COMP2 Y,Pb,Pr
Digital
OUT
DDR 12bit
MEMORY
(64Mb)
K4S643232x2
MAIN-V
Componet-1
▶ COMP1_Y
▶ COMP1_Pb
▶ COMP1_Pr
UPD64083
3D-COMB
TEA6425
S-VIDEO
S/W
MAIN-Y/C
ADV7400
Main
(NT & ADC)
NR_Out 16bit
NR_In 16bit
RS-232 A
RS-232 B
RS-232C
Anynet
G-Link
Componet-2
▶ COMP2_Y
▶ COMP2_Pb
▶ COMP2_Pr
COMP1 Y,Pb,Pr
COMP2 Y,Pb,Pr
DNIe_NR_EN
BUF
Ext
VIDEO
IN #B
HDMI_1 Rx
▶ TMDS
HDMI
TMDS
SiI9021
16bit(4:2:2),CLK,HS,VS
AUDIO
OUT
SPDIF_OUT
Optical
HDMI_2 Rx
▶ TMDS
HDMI
TMDS
HDMI Rx
(dual)
I2S_HDMI
I2S_1394I
MUX
MUX
I2S_IN
AUDIO
IN
I2S_OUT
L1/R1
L2/R2
Side-L/R
Comp1-L/R
Comp2-L/R
PC-L/R
TEA6422
Audio SW
Main-L/R
Sub-L/R
M_SIF
S_SIF
MSP4440
Sound
Processor
I2S_NTSC
L/Rout
Mon-L/Rout
TPA3001D1x2
Audio Amp
15W+15W

- ■ ADV7400: Analog YPBPR, CVBS, Y/C(SUPER), Input MUXING and Video Decoding
- ■ X226: CPU, + MPEG Decoder, Audio signals transferred to MSP of the analog board by I2S
- ■ DNIe: Uses a noise-filtering and picture quality improvement algorithm to implement natural colors.
- ■ Tuner: Two HD tuners, each taking the role of the analog tuner.
- ■ HDMI: Receives one input signal and transfers it to X226 in 24 bits.
- ■ Others: Anynet implementation, Optical Power Port, USB Update Port (not available for MP3)

The L8HD digital board contains two HD tuners to implement analog as well as digital signals from air/cable broadcasting.
It decodes Y PB PR CVBS, Y/C(SUPER) and HDMI inputs using ADV7401 and silicon chips, which are transferred to X226 (ATI), a combination of the main CPU and the MPEG decoder.
All video/audio inputs are transferred to X226 for digital processing and all video output goes through DNIe to the DLP DMD board.
Audio signals are transferred to the MSP chip of the analog board using I2S and are emitted through the speaker.
It also has an Anynet port, a 5.1 channel optical port and a USB port for a S/W update.

## 13-2-3 Analog Board Block Description


SCL-A
SDA-A
TEA6425
(IC148)
Y/C SW
Video
Matrix S/W
6 in, 8 out
Adder
Tri-State
S1/S2/S3-Y
S1/S2/S3-C
Comb-Y-Out
Comb-C-Out
Main-Y-Out
Main-C-Out
Sub-YOut
Sub-COut
Side-Y/C
TEA6425
(IC147)
Mixer SW
Video
Matrix S/W
6 in, 8 out
Adder
Tri-State
Main-Y(V)-Out
Main-C-Out
Sub-Y-Out
Sub-C-Out
Cap-Y-Out
Mon-Mixed-V-Out
Main-Y(V)
Main-C
Sub-Y(V)
Sub-C
Cap-CVBS
Mon-Vout
TEA6425
(IC146)
Video SW
Video
Matrix S/W
6 in, 8 out
Adder
Tri-State
MTNR-CVBS
STNR-CVBS
DTV-CVBS
V1/V2
Side-V
Main-V-Out
UPD64083
(IC128)
3 D-Comb
Sub-V-Out
Cap-V-Out
Mon-V-Out
TEA6422
(IC149)
Audio SW
Audio
Matrix S/W
6 in, 3 out
L1/R1
L2/R2
Side-L/R
Comp1-L/R
Comp2-L/R
PC-L/R
Main-L/R
Sub-L/R
MTNR-SIF
STNR-SIF
DVI(HDMI2)-L/R
MSP44XX
(IC124)
Sound
Processor
Mon-L/Rout
Amp-In-L/R
Gain0/Gain1
TPA3001D1
(IC125/126)
Audio Amp
15 W+15W

- ■ Analog Video Signal Processing
- ■ Select Sound/Video

  One is selected from multiple inputs by the switching ID. MICOM decides which port is used for output.

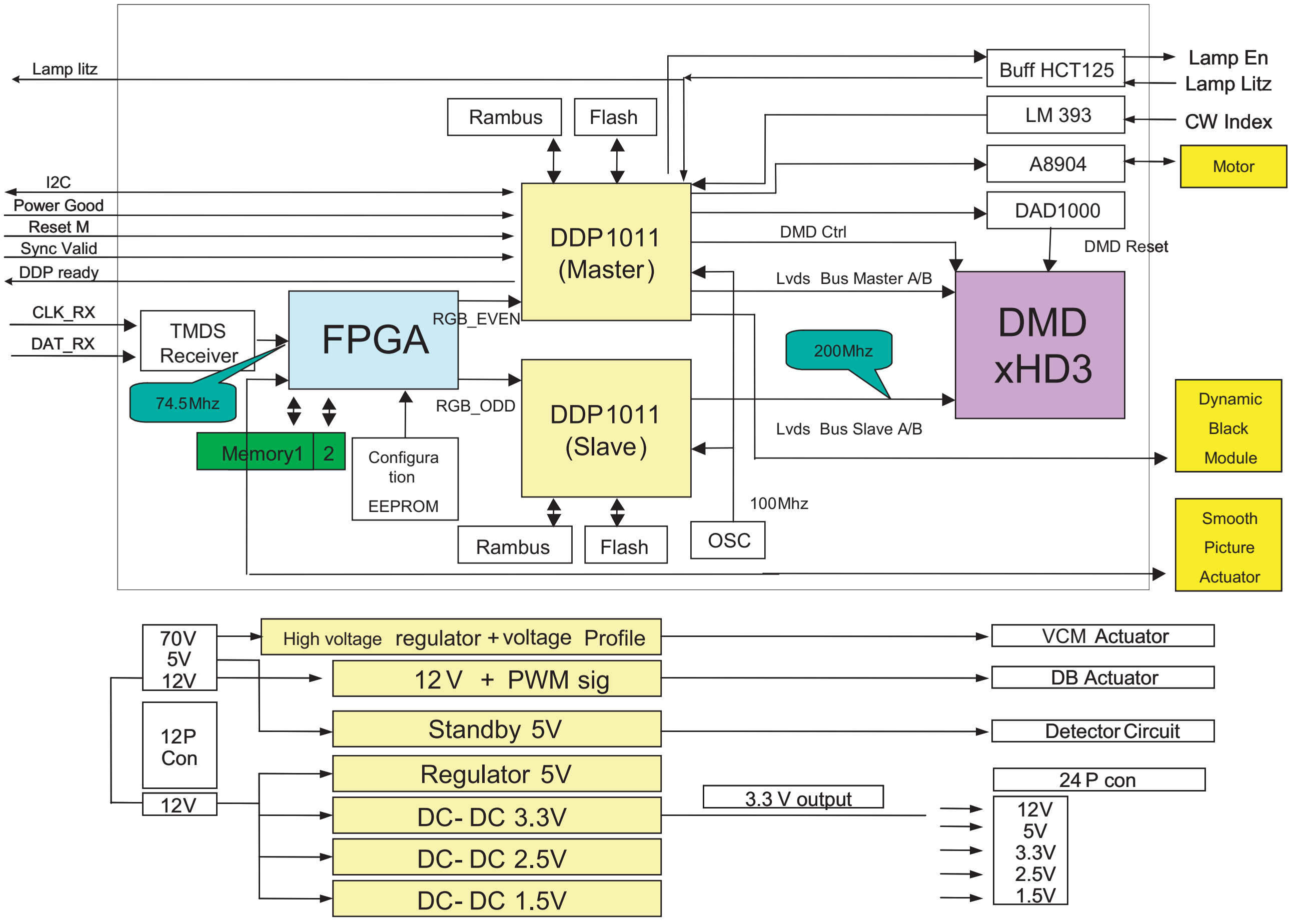
  For broadcasting signals, sub-outputs are transferred in CVBS and, the main outputs in Y/C through the 3D Comb, to the digital board.

  Sound signals are selected by the switching IC, of which only one input is transferred to the speaker.
- ■ Detection Signal Flow

  When each port is connected to a signal cable, the detection signal is "low" and can be checked by Micom scanning.
- ■ Y/C Separation

  The 3D Comb filter divides RF CVBS signals into Y/C before being transferred to the digital board.

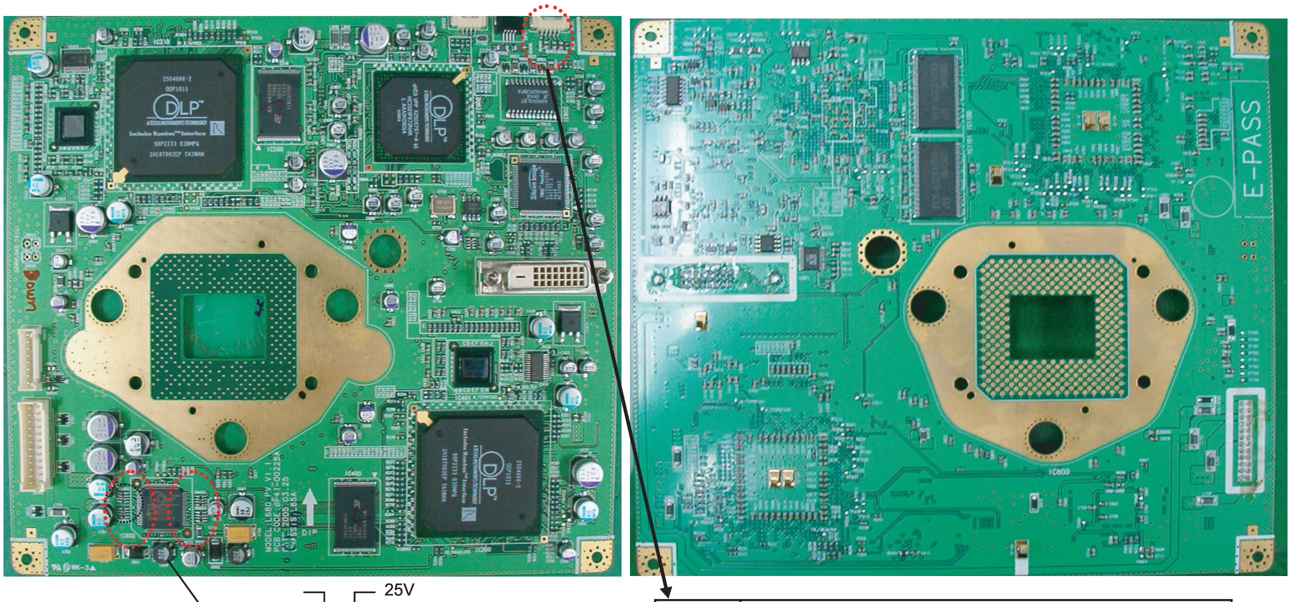
## 13-2-4 DMD Board Block Description


Lamp litz
Buff HCT125
Lamp En
Lamp Litz
Rambus
Flash
LM 393
CW Index
A8904
Motor
I2C
Power Good
Reset M
Sync Valid
DDP ready
DDP1011
(Master)
DAD1000
DMD Ctrl
DMD Reset
Lvds Bus Master A/B
CLK_RX
DAT_RX
TMDS
Receiver
FPGA
RGB_EVEN
DMD
xHD3
200Mhz
74.5Mhz
RGB_ODD
DDP1011
(Slave)
Dynamic
Black
Module
Lvds Bus Slave A/B
Memory1
2
Configura
tion
EEPROM
100Mhz
Rambus
Flash
OSC
Smooth
Picture
Actuator
70V
5V
12V
High voltage regulator + voltage Profile
VCM Actuator
12 V + PWM sig
DB Actuator
12P
Con
Standby 5V
Detector Circuit
Regulator 5V
24 P con
12V
3.3 V output
DC- DC 3.3V
DC- DC 2.5V
DC- DC 1.5V
12V
5V
3.3V
2.5V
1.5V

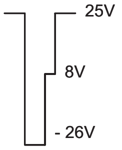
- Controls the lamp (ON/OFF)
- Drives the color wheel motor
- Drives the panel
- Controls the sensors

# 13-3 New Circuit Description

## 13-3-1 Output Voltage States of the DMD Board Parts



Output Terminal
Waveform for
RA600,601,602,603



| LOC | Characteristics | |
|---|---|---|
| BD904 | LAMP EN | High from DDP1011 |
| BD902 | LAMP LITZ | High(5V) before the lamp turns on, Low(0V) when the lamp turns on |

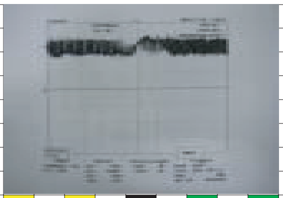
## 13-3-2 DMD Panel Pin Terminal Characteristics Diagram

※ Remove the heat sink attached to the DMD Board and tighten the screws in four places and then inspect the characteristics of each pin terminal.

| | 40 | 39 | 38 | 37 | 36 | 35 | 34 | 33 | 32 | 31 | 30 | 29 | 28 | 27 | 26 | 25 | 24 | 23 | 22 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | | | | ■ | | V | | V | | DA | N6 | DA | N4 | V | | DA | N2 | DA | P0 | V | | G | | G | | ■ | | V | | V | | G | | G | | ■ | | V | | N | A |
| B | | | V | | | | | | ■ | | DA | P6 | DA | P4 | ■ | | DA | P2 | DA | N0 | ■ | | ■ | | ■ | | ■ | | ■ | | G | | | | C | | ■ | | ■ | | B |
| C | | ■ | | ■ | | ■ | | G | | ■ | | DA | P7 | DA | P5 | ■ | | DA | N3 | DA | N1 | ■ | | ■ | | ■ | | ■ | | G | | | | ■ | | ■ | | ■ | | V | C |
| D | DA | N8 | DA | P8 | C | | C | | ■ | | DA | N7 | DA | N5 | ■ | | DA | P3 | DA | P1 | ■ | | ■ | | ■ | | G | | | | ■ | | | | | | ■ | | V | | D |
| E | | DA | N10 | DA | P10 | DA | P9 | DA | N9 | | | | | | | | | | | | | | | | | | | | | | | | | ■ | | ■ | | ■ | | V | E |
| F | V | | ■ | | ■ | | ■ | | | | | | | | | | | | | | | | | | | | | | | | | | ■ | | ■ | | V | | V2 | | F |
| G | | DA | N12 | DA | P12 | DA | P11 | DA | N11 | | | | | | | | | | | | | | | | | | | | | | | | | ■ | | ■ | | ■ | | V2 | G |
| H | V2 | | V2 | | DA | P13 | DA | N13 | | | | | | | | | | | | | | | | | | | | | | | | | ■ | | ■ | | ■ | | V2 | | H |
| J | | V | | ■ | | ■ | | ■ | | | | | | | | | | | | | | | | | | | | | | | | | | ■ | | ■ | | V | | V2 | J |
| K | DA | P14 | DA | N14 | DA | P15 | DA | N15 | | | | | | | | | | | | | | | | | | | | | | | | | ■ | | ■ | | | | V | | K |
| L | | DB | P14 | DB | N14 | DB | P15 | DB | N15 | | | | | | | | | | | | | | | | | | | | | | | | | ■ | | | | ME | | V | L |
| M | V | | ■ | | ■ | | ■ | | | | | | | | | | | | | | | | | | | | | | | | | | ■ | | 14 | | 11 | | V2 | | M |
| N | | V2 | | V2 | | DB | P13 | DB | N13 | | | | | | | | | | | | | | | | | | | | | | | | | 10 | | 5 | | 1 | | V2 | N |
| P | DB | N10 | DB | P10 | DB | P11 | DB | N11 | | | | | | | | | | | | | | | | | | | | | | | | | ■ | | 4 | | V | | V2 | | P |
| R | | V | | ■ | | ■ | | ■ | | | | | | | | | | | | | | | | | | | | | | | | | | ■ | | ■ | | V | | V2 | R |
| T | DB | N10 | DB | P10 | DB | P9 | DB | N9 | | | | | | | | | | | | | | | | | | | | | | | | | ■ | | ■ | | ■ | | V | | T |
| U | | DB | N8 | DB | P8 | | | | | ■ | | DB | N7 | DB | N5 | ■ | | DB | P3 | DB | P1 | ■ | | 6 | | 3 | | T0 | | G | | | | | | 0 | | ■ | | V | U |
| V | ■ | | ■ | | ■ | | EV | | ■ | | DB | P7 | DB | P5 | ■ | | DB | N3 | DB | N1 | ■ | | 13 | | 9 | | ■ | | | | G | | ■ | | | | ■ | | V | | V |
| W | | V | | C | | C | | ■ | | DB | P6 | DB | N4 | ■ | | DB | P2 | DB | N0 | ■ | | 12 | | 8 | | ■ | | 7 | | T2 | | G | | C | | ■ | | V | | | W |
| Y | | | ■ | | V | | V | | DB | N6 | DB | P4 | V | | DB | N2 | DB | P0 | V | | | | | | ■ | | V | | 2 | | T1 | | G | | ■ | | V | | | | Y |
| | 40 | 39 | 38 | 37 | 36 | 35 | 34 | 33 | 32 | 31 | 30 | 29 | 28 | 27 | 26 | 25 | 24 | 23 | 22 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |

The vertical lines, which may occur due to improper connections between the panel and the PCB, occur with intervals of 50 inches(26mm). If vertical lines occur with intervals of more than 26mms, it indicates a failure of the DDP1011 IC itself. If they occur with intervals of less than 26mm, it means that more than two pins have bad connections.

DA,DB output wave
[Screen:WHITE]



| Pin Name | Description | Pin Name | Description |
|---|---|---|---|
| V | Voltage : 3.3V | T | Test Point |
| V2 | VCC2 : 8V | ME | Mirror Bias Extra |
| DA | A Channel Data Bus [When measured, there should be a waveform] | C | Clock |
| DB | B Channel Data Bus [When measured, there should be a waveform] | P# | A,B Channel Positive |
| NO. | MBRST# (Mirror Bias Rest) 26V | N# | A,B Channel Negative |
| G | The part from the present position to the GND (The black part is also a GND.) | | |

## 13-3-3 Description of Terminal Characteristics

| Pin Name | Description |
|---|---|
| SCTRL_BN/P | B channel LVDS serial control |
| DCLK_BN/P | B channel LVDS CLOCK |
| SCPDI | SERIAL CONTROL DATA INPUT |
| SCPDO | SERIAL CONTROL DATA OUTPUT |
| SCPENB | SERIAL CONTROL ENABLE |
| SCPCK | SERIAL CONTROL CLOCK |
| DMD RESETB | DMD LOGIC RESET |
| MBRST(14:0) | MIRROR BIAS RESET |
| MBRST_EXTRA | UNUSED MIRROR BIAS RESET |
| SCR_CLR | TEST CLEAR PINS(NORMAL GND) |
| READOUTA(1:0) | A-CHANNEL SERIAL DATA OUT DURING SPAM READ TEST OPERATION |
| READOUTB(1:0) | B-CHANNEL SERIAL DATA OUT DURING SPAM READ TEST OPERATION |
| TP(2:0) | MANUFACTORING TEST POINT(NO CONNECTED DURING NORMAL CPERATION) |
| RSV_A(4:0)/RSV_B(4:0) | RESERVED PINS(NORMAL:GND) |
| EVCC | REFERENCE VOLTAGE DURING SPAM READ TEST OPERATION(NORMAL GND) |
| VCC2 | MIRROR ELECTRODE VOLTAGE(7.3V) |
| VCC | LOGIC SUPPLY |
| VSS | LOGIC GROUND |

## 13-3-4 Engine Failure Inspection Flow Chart for the DMD Board

| No. | Description | Key Point | Remark |
|---|---|---|---|
| 1 | 1) When the power cord is plugged in,<br>2) DC220V~410V(typical 300V) is automatically supplied to the ballast. | Check whether the DC220V~410V(typical 300V) power is supplied to the ballast. | |
| 2 | 1) When the power key is pressed via the remote control, the micom of the analog board outputs high (5V) PWR signals.<br>2) The power board operates normally. 5V and 12V are supplied to the DMD CN105 terminal. | Check whether 5V and 12V are supplied to the CN105 terminal. | ⁎ 12V must be supplied to operate the motor. |
| 3 | 1) The MTR Reset signal is supplied to the R161 terminal of the motor IC101 from the micom on the digital board and then the motor starts to drive.<br>2) If the color wheel rotates for a certain time and then stops, check whether the color wheel sensor is normal. (Check the waveform on the No.2 terminal below CN102.) | After the set is powered on, check whether 5V is detected on pin No.49 of IC101.<br>→ After a while, the sound generated by the rotating color wheel is heard. | ⁎ If 5V is not detected, the motor will not operate. |
| 4 | 1) Check whether the signal (SCI: START CONTROL INPUT) that turns on lamp #2 of CN109 on the DMD board is high (5V). | Check whether CN109 #2 signal is 5V. | ⁎ When SCI is high (5V), the lamp litz of CN109 is low (0V).<br>⁎ CN109 #2 terminal voltage changes to pulse wave form 14 seconds after (for 50 inch TV) the time that the voltage is 5V.<br>* When about 4 seconds have passed after changing to pulse waveform, the screens are displayed on the set. |
| 5 | 1) Method for checking whether the DDP1010 IC RESET is normal. | If the voltage between R254 and R255 is 3V, it is normal. | |

## 13-3-5 IC Line Up

1. Power Board

| Items | Descriptions | Remarks |
|---|---|---|
| Main SMPS | FS7M0880, Fairchild | IC-PWM Controller ; Main Power |
| Stand-by SMPS [America] | KA1M0565, Fairchild | IC-PWM Controller ; Stand-by Power |
| Stand-by SMPS [Korea] | KA5M0165, Fairchild | IC-PWM Controller ; Stand-by Power |

2. Digital Board

| Items | Descriptions | Remarks |
|---|---|---|
| MPEG2 Decoder | X226B | CPU(MIPS), TS Demux, MPEG2 Decoder,<br>Format converter, Deinterlacer, Scaler, USB |
| analog Decoder, ADC | ADV7401 | Video Processor, ADC |
| HDMI Receiver | sil9021 | Digital Receiver for HDMI with HDCP |
| COMPONENT S/W | BA7657 | COMPONENT S/W, H/V Sync S/W |
| Video Enhance | SDP32 SAMSUNG | RGB Processor |
| Program ROM | 28F128 x 2 | 32M(1M x 16) x 2, Nor-Type Flash Memory |
| Frame Buffer | 192MB DDR, 64M ,Samsung | Frame Memory |
| TMDS Transmitter | sil160 | sil160CT100 |
| IEEE1394 | JEDI(TSB43DA42A) | IEEE1394 Interface |
| Gemstar EPG | Yamu MICOM(3P8OB5X) | IR Blaster |

3. Analog Board

| Items | Descriptions | Remarks |
|---|---|---|
| Video Switch | TEA6425, SGS-Thomson | Video Switch IC for TV *3 |
| Audio Switch | TEA6422, SGS-Thomson | Audio Switch IC for TV |
| 3D-Comb | uD64083, NEC | 3 Dimensional Y/C Separation LSI |
| Sound Module | MSP4440, Micronas | Multistandard Sound Processor With TruSorround XT |
| Sound AMP | TPA3001D, TI | 1 Channel Digital Audio Power Amplifier *2 |
| Micom | SDA55xx, Micronas | Micro Controller |

4. DMD Board

| Items | Descriptions | Remarks |
|---|---|---|
| DMD Driver | DDP1011, TI | DLP Data Processor |
| Reset, Power | DAD1000, TI | DMD Power and Reset Driver |
| Motor Controller | A8904, Allegro | 12V VCM/Spindle Pre-Driver |
| Frame Buffer | K4R271669, Samsung | 128M(246K x 16 x 32B), Rambus DRAM |
| Clock Generator | CDCR83, TI | Direct Rambus Clock Generator |
| Program ROM | M29W800BT, ST | 8M(1M x 8 or 512K x 16), Flash Memory |
| Actuator Driver | Cyclone, Altera | Frame Extractor 60Hz(1 frame) → 120Hz(1/2 frame) |
| LVDS Receiver | THC63LVD104, Thine | LVDS Digital Receiver, 75MHz |

# MEMO

# 14. Reference Information

## 14-1 Other issues related to other products

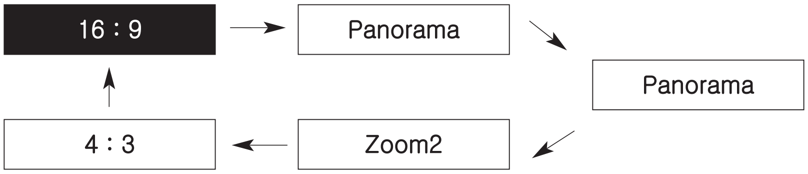
| Problem | Descriptions |
|---|---|
| A fixed screen can cause permanent damage to the TV Braun tube. | Braun, PDP and LCD TVs can all be damaged. When a still image is displayed in a sequence, this can leave stains or after-images due to the characteristics of the panel.<br>However, the DLP TV has the advantage that no stains or after-images are left on the screen.<br>The DLP TV has mirror pixels on the DMD panel that project the beam onto the screen, in which the mirror is a digital representation of 0s and 1s, leaving no trace of light.<br>The mirror returns to a blank state so that no stains or after-images are left. |
| Confusion between the ANYNET Port and the SERVICE Jack Port | The SAMSUNG SKY500N model has both an ANYNET port and a SERVICE jack port.<br>Because the shape of the ANYNET port on the DLP TV is the same as that of the SERVICE jack port of the SKY500N, it fails to turn the TV off after a connection has been reported.<br>The ANYNET port uses an RS232 port called Phone Jack, and the SERVICE jack port also uses the RS232 port. However, you must not connect the SERVICE port and the ANYNET port.<br>Check if the port is the ANYNET port or the SERVICE port before connecting the port.<br>Even if the TV cannot be turned on after connecting, the TV will turn on if you disconnect the connection. |
| Length of DVI Cable / PC RGB Cable | - A too long DVI cable may cause a malfunction or degradation of the visual quality due to an attenuation of the signal. There is no recommendation for the cable length at present. In general, although a cable length of up to 5 meters should work, please check if video is properly displayed on the screen after connecting. If you think the length of the cable is longer than for normal use, check the visual quality of the video on the screen and shorten the length, if necessary.<br>- This also applies to the PC RGB (D-Sub) cable. When the length of the cable is longer than for normal use, video may not be displayed on the screen. In this case, shorten the cable length. |
| When a digitally distributed TV user receives HD-rated broadcasts: | The digital distributed TV (Ready Technique) can render HD sources as HD-rated.<br>However, you need to install a set-top box for this purpose. The digital TV alone cannot render HD broadcasting as HD-rated. Install the formal set-top box for HD broadcasts. |
| When a digital distributed TV user selects normal size (4:3) to receive SD-rated digita broadcasts: | The digitally distributed TV (Ready Technique) renders any broadcasting service as SD-rated.<br>However, when connected to a set-top box, the digital TV renders HD broadcasts as HD-rated and renders SD as SD-rated. The screen size is scaled to 4:3. |
| When a digitally built-in TV user receives SD (air) broadcasting: | The digitally integrated TV ("built-in" type) renders SD broadcasting as SD-rated.<br>This can be understood easily.<br>Even a high-resolution TV cannot improve a low resolution picture into high quality.<br>In contrast, an SD-rated TV cannot represent HD broadcasting as HD because the resolution of the TV is lower than the original. |
| When selecting a picture size of 4:3 in connection with a computer or a multimedia device: | The representation capability of SD or HD-rated depend entirely on the TV set. The HD TV can render HD broadcasting as HD-rated only when it receives HD sources.<br>In the meantime, the HD TV renders SD as SD-rated when it receives SD sources.<br>The picture size has nothing to do with the resolution; TV models like SVP-XXL3HD or SVP-XXL6HD have a size adjustment feature to 16:9, 4:3, Panorama, Zoom1, Zoom2 and Auto Wide. This is about the aspect ratio of the top and bottom boundaries to the overall screen and users can select their preference. |

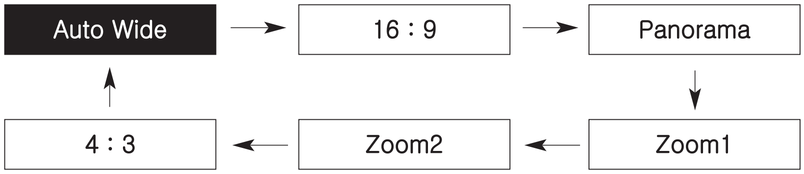
## ■ SD/HD broadcasts and the TV's display capability are related

1. A digital broadcast should be transmitted in wide screen (an aspect ratio of 16:9) HD. If the broadcasting station converts a conventional program created in normal screen (aspect ratio of 4:3) into a digital signal and broadcasts the signal, the left and right of the picture will not be displayed.
   This symptom also appears in other manufacturer's TV's. The three appliance companies are trying to resolve the problem through the Ministry of Information and Communication.
   - * When watching an SD (normal) broadcast through a Digital (Wide) TV (480P normal broadcast)
   - * When watching an SD (normal) broadcast through a Digital Ready (Wide) TV (Using a set-top-box)
   - * When watching an analog (normal) broadcast through a wide TV
     (When watching a broadcast after changing the aspect ratio of the TV from 16:9 (wide screen) to 4:3)

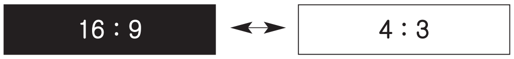
2. When watching a DVD title or video tape in wide screen (21:9) through a wide (16:9) TV, watching video from a computer or game console by selecting the aspect ratio to 4:3, or watching video from a DVD, VCR, computer or game console through a wide TV by selecting the aspect ratio to normal (4:3) or wide (21:9), the left and right, or top and bottom of the picture will not be displayed.
   This symptom appears in other manufacturer's TV's. The three appliance companies are trying to resolve the problem through the Ministry of Information and Communication.

## ■ Changing the Order of the Picture Size for 16:9 Display Devices





## ■ Changing the Order of the Picture Size for DTV 1080i/720p Sources



## ■ Restrictions

1. When you want to change the picture size in PIP 'ON', you must turn the PIP off before changing the size.
   However, you can change the main picture size even in PIP ON for products with no restrictions.

2. When the picture size is not Normal (4:3 for 4:3 display devices, 16:9 for 16:9 display devices) and you turn PIP on, the picture size is changed to Normal.
   However, you can turn PIP on without changing the picture size for products with no restrictions.

3. In the OSD notation for the picture size, 16:9 is represented as "Wide" instead of "16:9" for devices other than with 16:9 displays.
   Ex: For LCD 15:9 devices, "Wide" is displayed on the OSD instead of "16:9".

4. The picture size can be changed even in the blue screen.
   However, the picture size should be controlled by the product specifications if the change is impossible due to hardware restrictions.

## 14-2 Technical Terms

**PIP (Picture In Picture)**
A feature to enable two video images being displayed on one screen at the same time. For instance, you can see the TV channel and the video image at the same time.

**Digital Broadcasting**
The ATSC (Advanced Television Systems Committee) signals that the station digitalizes before transferring the audio/video signals.

**Mono**
A sound system that transmits voice signals in only one channel. It is hard to experience a 3D effect but can be run with one speaker.

**LNA (Low Noise Amplifier)**
This uses satellite technologies to amplify weak signals for improved quality even in poor reception areas.

**Stereo**
A sound system that transmits voice signals in two channels This implements 3D effects by transmitting to both speakers (left/right).

**Analog Broadcasting**
The conventional system in which the station transfers the audio/video signals in NTSC formats.

**Antenna Terminal**
A terminal which the TV antenna is connected to. A round coaxial cable is connected to this terminal, which is usually used to watch air broadcasts.

**English Captions (Subtitle)**
A feature to provide English captions or character information services, which the user can use to study English using AFKN broadcasting or video tapes marked with "CC".

**Audio/Video Terminal**
The old 3- or 4-channel TV with no AV terminal has a low quality issue for video tape. The problem can be resolved using an A/V terminal that separates the audio and video signals. The video terminal is in yellow; the audio terminal is divided in two, white for left and red for right.

**External Source**
This includes sources from the video recorder, DTV set-top box and DVD player, (anything but the TV).

**DVI-I Cable**
One of the DVI cables that can transfer both digital and analog signals.

**Satellite Broadcasting**
This uses a satellite system to support a maximum of 100 channels including air services and provides high quality pictures anywhere in the country, even in poor reception areas. A set-top box (unbundled) is required to watch satellite broadcasting.

**Closed Broadcasting**
Other than VHF and UHF, this includes movies, entertainment and educational programs broadcast by hotels or schools. This is different from cable broadcasting.

**Multiplexing**
Two languages are provided at the same time when broadcasting foreign movies, dramas and news programs. You can choose either a native or foreign language, or choose both at the same time.

**Component Terminal (Green, Blue, Red)**
This provides maximum quality by dividing the contrast signals before transferring.

**Cable Broadcasting**
Compared to air broadcasting, it uses the cable system to transfer the signals. You should subscribe to a local cable broadcasting company and install a separate receiver.

**Tuner**
A device used to select a particular frequency from the TV set or the radio receiver.

**Anynet**
An AV networking system of Samsung's various AV devices, which enables the user to conveniently control AV devices using the TV.

**DVD (Digital Versatile Disc)**
This is a CD-sized, high storage disk that can store multimedia data including videos, games and audio applications using MPEG-2 compression technology.

**DVI (Digital Visual Interface) Terminal**
This is a digital signaling standard.
This uses TMDS to reduce the signal loss rate for sharper images.

**DVI-D Cable**
One of the DVI cables that can only transfer digital signals.

**HDMI (High Definition Multimedia Interface)**
An interface into which the digital signals as well as the high quality image data can be connected with one cable. There is no need to compress the bit rate.

**S-video Terminal**
This is, called "Super-video", divided into video and color signals for sharper image display.

**VHF/UHF**
VHF refers to the 2 - 13 channel system; UHF indicates the 14 - 69 channel system.

SAMSUNG

ELECTRONICS

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